

A-Part 1/Item 3
Waste Analysis Plan
(WAP)
For LLBG
7 of 7

(2 Copies)

A-Part 1/Item 3

Waste Analysis Plan

(WAP)

For LLBG

7 of 7

(2 Copies)

HNF-5841
Revision 4

Low-Level Burial Grounds Waste Analysis Plan

Prepared for the U.S. Department of Energy
Assistant Secretary for Environmental Management

Project Hanford Management Contractor for the
U.S. Department of Energy under Contract DE-AC06-96RL13200

FLUOR.
P.O. Box 1000
Richland, Washington

**Approved for Public Release;
Further Dissemination Unlimited**

HNF-5841
Revision 4

Low-Level Burial Grounds Waste Analysis Plan

Date Published

March 2008

Prepared for the U.S. Department of Energy
Assistant Secretary for Environmental Management

Project Hanford Management Contractor for the
U.S. Department of Energy under Contract DE-AC06-96RL13200

FLUOR.

P.O. Box 1000
Richland, Washington

A. D. Aardal 04/10/2008
Release Approval Date

**Approved for Public Release;
Further Dissemination Unlimited**

EXECUTIVE SUMMARY

The Low-Level Burial Grounds provides disposal, storage, and/or treatment, and confirmation of dangerous waste, and/or mixed waste from onsite generators, onsite Solid Waste Operations Complex-generated waste units, Low-Level Burial Grounds-generated waste, or offsite generators (hereafter referred to as the 'generator' unless otherwise denoted in this waste analysis plan). The Solid Waste Operations Complex treatment, storage, and/or disposal units consist of Central Waste Complex, Waste Receiving and Processing Facility, Low-Level Burial Grounds, and T Plant Complex. This waste analysis plan provides processes to obtain information on the chemical, biological, and physical characteristics of the waste managed to meet the requirements of Washington Administrative Code 173-303-300, *General Waste Analysis*.

This page intentionally left blank.

This page intentionally left blank.

CONTENTS

1			
2			
3	1.0	UNIT DESCRIPTION.....	1-1
4	1.1	Description of Unit Processes and Activities.....	1-1
5	1.1.1	Waste Acceptance, Movement, Processing, and Management.....	1-2
6	1.1.2	Operating Conditions.....	1-6
7	1.2	Identification and Classification of Waste.....	1-6
8	1.2.1	Dangerous Waste Numbers, Quantities, and Design Capacity.....	1-8
9	2.0	CONFIRMATION PROCESS.....	2-1
10	2.1	Pre-Shipment Review.....	2-1
11	2.1.1	Waste Stream Approval Process.....	2-1
12	2.1.2	Waste Shipment Approval Process.....	2-4
13	2.1.3	Knowledge Requirements.....	2-4
14	2.2	Verification.....	2-6
15	2.2.1	Container Receipt Inspection.....	2-7
16	2.2.2	Physical Screening Process.....	2-7
17	2.2.3	Chemical Screening Process.....	2-9
18	2.2.4	Sampling for Confirmation Screening.....	2-10
19	2.2.5	Quality Assurance and Quality Control for Confirmation Process.....	2-10
20	2.3	Waste Transfers Between Solid Waste Operations Complex TSD Units.....	2-11
21	2.3.1	Waste Stream Approval Process.....	2-11
22	2.3.2	Waste Transfer Approval Process.....	2-12
23	2.3.3	Verification.....	2-12
24	2.3.4	Performance Evaluation System.....	2-12
25	2.4	Waste Acceptance.....	2-12
26	2.5	Discrepant Container Management.....	2-13
27	2.6	Sampling and Analysis Plans.....	2-13
28	2.7	Waste Stream Approval Process for WRP Waste.....	2-14
29	2.8	Generated Waste.....	2-14
30	3.0	SELECTING WASTE ANALYSIS PARAMETERS.....	3-1
31	3.1	Physical Screening Parameters.....	3-2
32	3.2	Chemical Screening Parameters.....	3-2
33	3.3	Other Analysis Parameters.....	3-5
34	4.0	SELECTING SAMPLING PROCESSES.....	3-12
35	4.1	Sampling Strategies.....	4-1
36	4.2	Sampling Methods.....	4-1
37	4.3	Selecting Sampling Equipment.....	4-2
38	4.4	Sample Preservation.....	4-2
39	4.5	Establishing Quality Assurance and Quality Control For Sampling.....	4-2
40	5.0	LABORATORY SELECTION AND QUALITY ASSURANCE/QUALITY CONTROL.....	5-1
41	5.1	Evaluation of Laboratories.....	5-1
42	5.2	Quality Assurance/Quality Control Objectives.....	5-1
43	5.3	Laboratory Quality Assurance/Quality Control.....	5-2
44	5.4	Data Assessment.....	5-3
45	6.0	SELECTING WASTE RE-EVALUATION FREQUENCIES.....	6-1

1	7.0	SPECIAL WASTE ANALYSIS PROCEDURAL REQUIREMENTS	7-1
2	7.1	Processes for Receiving Onsite and Offsite Waste	7-1
3	7.2	Processes for Ignitable, Reactive, and Incompatible Waste	7-1
4	7.3	Provisions for Complying With Federal and State Land Disposal Restriction	
5		Requirements.....	7-1
6	7.3.1	Waste Treatment.....	7-1
7	7.3.2	Sampling and Analytical Methods.....	7-2
8	7.3.3	Land Disposal Restriction Certification of Treatment	7-3
9	8.0	RECORDKEEPING.....	8-1
10	9.0	REFERENCES.....	9-1

FIGURES

16	Figure 1-1.	Waste Transfers Between Solid Waste Operations Complex TSD Units.....	1-10
17	Figure 1-2.	Waste Confirmation and Acceptance Process for Newly Generated Waste.....	1-11
18	Figure 1-3.	Waste Tracking.....	1-12
19	Figure 2-1.	Waste Acceptance Process.....	2-3

TABLES

25	Table 1-2.	Chemicals Incompatible With the High-Density Polyethylene Liner.....	1-8
26	Table 3-1.	Parameters and Rationale for Physical and Chemical Screening.....	3-1
27	Table 3-2.	Analytical Parameters, Methods, and Rationale for Waste Received at Low-Level Burial	
28		Grounds.....	3-7
29	Table 4-1.	LLBG Chemical Screening Sampling Equipment.....	4-3

ACRONYMS

1		
2		
3		
4	ALARA	as low as reasonably achievable
5	AOAC	Association of Official Analytical Chemists
6	APHA	American Public Health Association
7	ASNT	American Society for Nondestructive Testing
8	ASTM	American Society for Testing and Materials
9		
10	CAP	corrective action plan
11	CCW	constituent concentrations in waste
12	CCWE	constituent concentrations in waste extract
13	COLIWASA	composite liquid waste sampler
14	CFR	Code of Federal Regulations
15	CWC	Central Waste Complex
16		
17	DOE-RL	U.S. Department of Energy, Richland Operations Office
18	DQO	data quality objectives
19		
20	Ecology	Washington State Department of Ecology
21	EPA	U.S. Environmental Protection Agency
22		
23	HNF	Hanford Nuclear Facility (document identifier)
24		
25	LDR	land disposal restriction
26	LLBG	Low-Level Burial Grounds
27		
28	MSDS	material safety data sheet
29		
30	NDA	nondestructive assay
31	NDE	nondestructive examination
32	NIOSH	National Institute for Occupational Safety and Health
33		
34	PCB	polychlorinated biphenyl
35	PES	performance evaluation system
36	pH	negative logarithm of the hydrogen-ion concentration
37	PPE	personal protective equipment
38		
39	QA	quality assurance
40	QC	quality control
41		
42	RCRA	<i>Resource Conservation and Recovery Act of 1976</i>
43	RCW	Revised Code of Washington
44		
45	SAP	sampling and analysis plan
46	SWOC	Solid Waste Operations Complex
47		
48	T Plant	T Plant Complex
49	TCLP	toxicity characteristic leaching procedure
50	TPA or Tri-Party Agreement	<i>Hanford Federal Facility Agreement and Consent Order</i>
51	TSCA	<i>Toxic Substances Control Act of 1976</i>

1	TSD	treatment, storage, and/or disposal
2		
3		
4	UHC	underlying hazardous constituents
5		
6	WAC	Washington Administrative Code
7	WAP	waste analysis plan
8	WRAP	Waste Receiving and Processing (Facility)
9	WRP	Waste Retrieval Project

METRIC CONVERSION CHART

Into metric units

Out of metric units

If you know	Multiply by	To get	If you know	Multiply by	To get
Length			Length		
inches	25.40	millimeters	millimeters	0.03937	inches
inches	2.54	centimeters	centimeters	0.393701	inches
feet	0.3048	meters	Meters	3.28084	feet
yards	0.9144	meters	Meters	1.0936	yards
miles (statute)	1.60934	kilometers	kilometers	0.62137	miles (statute)
Area			Area		
square inches	6.4516	square centimeters	square centimeters	0.155	square inches
square feet	0.09290304	square meters	square meters	10.7639	square feet
square yards	0.8361274	square meters	square meters	1.19599	square yards
square miles	2.59	square kilometers	square kilometers	0.386102	square miles
acres	0.404687	hectares	hectares	2.47104	acres
Mass (weight)			Mass (weight)		
ounces (avoir)	28.34952	grams	Grams	0.035274	ounces (avoir)
pounds	0.45359237	kilograms	kilograms	2.204623	pounds (avoir)
tons (short)	0.9071847	tons (metric)	tons (metric)	1.1023	tons (short)
Volume			Volume		
ounces (U.S., liquid)	29.57353	milliliters	milliliters	0.033814	ounces (U.S., liquid)
quarts (U.S., liquid)	0.9463529	liters	Liters	1.0567	quarts (U.S., liquid)
gallons (U.S., liquid)	3.7854	liters	Liters	0.26417	gallons (U.S., liquid)
cubic feet	0.02831685	cubic meters	cubic meters	35.3147	cubic feet
cubic yards	0.7645549	cubic meters	cubic meters	1.308	cubic yards
Temperature			Temperature		
Fahrenheit	subtract 32 then multiply by 5/9ths	Celsius	Celsius	multiply by 9/5ths, then add 32	Fahrenheit
Energy			Energy		
kilowatt hour	3,412	British thermal unit	British thermal unit	0.000293	kilowatt hour
kilowatt	0.94782	British thermal unit per second	British thermal unit per second	1.055	kilowatt
Force/Pressure			Force/Pressure		
pounds (force) per square inch	6.894757	Kilopascals	kilopascals	0.14504	pounds per square inch

06/2001

Source: *Engineering Unit Conversions*, M. R. Lindeburg, PE., Third Ed., 1990, Professional Publications, Inc., Belmont, California.

METRIC CONVERSION CHART

Unit of metric units

This page intentionally left blank.			
Length		Length	
inches	millimeters	inches	millimeters
feet	meters	feet	meters
yards	meters	yards	meters
miles (statute)	kilometers	miles (statute)	kilometers
Area		Area	
square inches	square centimeters	square inches	square centimeters
square feet	square meters	square feet	square meters
square yards	square meters	square yards	square meters
square miles	square kilometers	square miles	square kilometers
acres	hectares	acres	hectares
Mass (weight)		Mass (weight)	
ounces (avoirdupois)	grams	ounces (avoirdupois)	grams
pounds (avoirdupois)	kilograms	pounds (avoirdupois)	kilograms
tons (short)	tons (metric)	tons (short)	tons (metric)
Volume		Volume	
ounces (U.S. liquid)	milliliters	ounces (U.S. liquid)	milliliters
quarts (U.S. liquid)	liters	quarts (U.S. liquid)	liters
gallons (U.S. liquid)	liters	gallons (U.S. liquid)	liters
cubic feet	cubic meters	cubic feet	cubic meters
cubic yards	cubic meters	cubic yards	cubic meters
Temperature		Temperature	
Fahrenheit	Celsius	Fahrenheit	Celsius
Energy		Energy	
British thermal unit	British thermal unit	British thermal unit	British thermal unit
kilowatt hour	kilowatt hour	kilowatt hour	kilowatt hour
Force/Pressure		Force/Pressure	
pounds (force)	kilopascals	pounds (force)	kilopascals
psi	psi	psi	psi

Source: Engineering and Conversion, M. K. Insouff, PE, Third Ed., 1990, Professional Publications, Inc., Belmont, California

LOW-LEVEL BURIAL GROUNDS WASTE ANALYSIS PLAN

1.0 UNIT DESCRIPTION

The purpose of this waste analysis plan (WAP) is to document the waste acceptance process, sampling methodologies, analytical techniques, and overall processes that are undertaken for waste accepted for treatment, storage, and/or disposal at the Low-Level Burial Grounds (LLBG). For a detailed description of the LLBG refer to LLBG, Chapter 1.0, "Part A Form", Chapter 2.0, "Facility Description and General Provisions", Chapter 4.0, "Process Information" (DOE/RL-88-20). Activities may be performed by the LLBG operating organization or its delegated representative.

1.1 Description of Unit Processes and Activities

The LLBG are a land-based unit consisting of two burial grounds located in the 200 East Area and 200 West Area (for locations refer to Chapter 1.0, Part A). Mixed waste is and has been received from onsite generating units and from offsite generators and is and will be disposed in mixed waste trenches. Leachate collected from lined trenches in 218-W-5 Burial Ground is transferred to leachate collection tanks that are located in proximity to the lined trenches.

The 218-E-12B Burial Grounds are classified as a landfill (D81) and the 218-W-5 Burial Ground is classified as a landfill (D81), greater-than-90-day container storage (S01), and other treatment (T04). The regulated portions of the LLBG cover a total area of approximately 49 hectares.

The 218-E-12B Burial Ground is located in the 200 East Area and 218-W-5 Burial Ground is located in the 200 West Area. All mixed waste destined for disposal meets land disposal restriction (LDR) requirements (WAC 173-303-140, 40 CFR 268, and RCW-70.105) or other regulatory alternatives as described in Chapter 3.0, Waste Analysis Plan. The lined trenches (trenches 31 and 34 in the 218-W-5 Burial Ground) have leachate collection and removal systems. The leachate collection tanks are operated in accordance with the generator provisions of WAC 173-303-200.

Disposal of mixed waste in unlined trenches requires an exemption from the liner/leachate collection system requirements. This documentation includes an exemption request for trench 94 for the disposal of U.S. Navy defueled reactor compartments (refer to Chapter 4.0, Process Information).

The following provides a brief description and identifies the generic types of waste disposed in the LLBG. An electronic database is maintained that documents each waste receipt, type of waste, and disposal location.

- The 218-E-12B Burial Ground, trench 94 is approximately 68 hectares in size (Chapter 1.0) and receives reactor compartments from the U.S. Navy.
- The 218-W-5 Burial Ground, trenches 31 and 34 is approximately 37.2 hectares in size Chapter 1.0) and began receiving waste in 1986. Trenches 31 and 34 also are designated as a greater-than-90-day container storage, and treatment unit. Adjacent to the double-lined mixed waste trenches are leachate collection tanks. Examples of waste to be placed in the double-lined mixed waste trenches include mixed waste that has been treated to meet LDR requirements (including bulk waste), and macro-encapsulated long-length contaminated equipment, and mixed waste that can be treated within the trench.

1.1.1 Waste Acceptance, Movement, Processing, and Management

The LLBG uses waste tracking processes to ensure that the waste received at the LLBG matches the manifest or transfer papers, to ensure that the waste is tracked through the LLBG to final disposition, and to maintain the information required in WAC 173-303-380. Waste is tracked through processing such as segregation, repackaging, treatment, and/or intra-TSD unit transfers. The waste tracking process provides a mechanism to track waste through a uniquely identified container (refer to Figure 1-3). The unique identifier is a barcode (or equivalent) that is recorded in an electronic data tracking system. This mechanism encompasses waste acceptance, movement, processing, and management of waste. When a new container is used, identification numbers are assigned and maintained as the waste moves through LLBG. The container identification number allows the LLBG to link to hard copy or electronic copy of records that are maintained as part of the operating record to retain information on the location, quantity, and physical and chemical characteristics of the waste.

The following sections and Figure 1-1 and Figure 1-2 describe the process for waste acceptance and different types of information and knowledge reviewed/required during the acceptance process. The process for management of waste is described in Chapter 4.0.

1.1.1.1 Narrative Process Descriptions

Waste that meets applicable LDR requirements, as specified WAC 173-303-140, which incorporates by reference 40 CFR 268, is stored at the LLBG. Mixed waste that does not meet LDR requirements, as specified in 40 CFR 268 and WAC 173-303-140, is stored until the waste is processed for repackaging or further treatment at the LLBG or another approved location. The LLBG operating record contains information necessary to meet LDR requirements (Sections 2.1.3.2 and 7.3). Containerized waste that is not fully characterized or is awaiting analytical results can be stored at the LLBG as well. The Hanford Facility is required to test certain mixed wastes when treatment standards are expressed as a concentration to ensure that the waste or treatment residues are in compliance with applicable LDR requirements (Section 2.1.3.2 and 7.3). Such testing is performed according to the frequency specified in this WAP, as specified in 40 CFR 268.7(b), incorporated by reference by WAC 173-303-140.

1.1.1.2 Waste Acceptance Process

The waste acceptance process for the LLBG consists of following activities:

- Waste Stream Approval. The generator provides information concerning each waste stream on a waste profile sheet. The waste stream information is reviewed against the LLBG waste acceptance criteria. If the waste stream information is sufficient and meets the applicable acceptance criteria, the waste stream is approved. In addition, the initial verification frequency for the waste is determined in accordance with the requirements found in the performance evaluation system (PES) program (Section 1.1.1.3). For a more complete description of the waste stream approval process, refer to Section 2.1.1.
- Waste Shipment/Transfer Approval. The generator provides specific data for each waste container on the container data sheet. The container data are reviewed against the waste profile sheet data and the LLBG acceptance criteria before being approved for shipment/transfer. In addition, the LLBG determines if any of the containers require verification based on the verification frequency as determined by the PES. For a more complete description of the waste shipment/transfer approval process, refer to Section 2.1.2.

- **Verification.** All waste streams are subject to receipt inspection during the waste shipment acceptance process. The percentage of the waste stream selected for physical and/or chemical screening is determined in accordance with the requirements found in the PES program (Section 1.1.1.3). Containers are opened and verified visually or by NDE. Of those containers subjected to physical screening, a percentage is subject to chemical screening via field or laboratory analysis. All information and data are evaluated to confirm that the waste matches the waste profile and container data/information supplied by the generator.

1.1.1.2.1 Waste Acceptance Process Between Solid Waste Operations Complex TSD Units

Waste transfers between Solid Waste Operations Complex (SWOC) TSD units could be necessary to support Hanford Site goals. In these instances a waste stream profile, or other approved processes that already has been developed, may be used to support these activities. A container may be transferred between SWOC facilities to accommodate the verification activities. A documented review is required to ensure compliance with the LLBG waste acceptance criteria. All waste transfers and containers are subject to receipt inspection. For waste that has not been accepted at CWC, LLBG, WRAP, or T Plant Complex TSD units; physical and or chemical screening will be completed as described in Sections 3.1, 3.2, and 3.3. The individual container data, inclusive of all knowledge obtained on the waste is compared to the LLBG waste acceptance requirements. Previously accepted waste that has not been considered for verification will be verified prior to transfer between SWOC TSD units. For a more complete description of the transfer process, refer to Section 2.3.

1.1.1.2.2 Types of Knowledge

When collecting documentation on a waste stream or container, the LLBG must determine if the information provided by the generator meets the definition of knowledge in WAC 173-303-040. Knowledge requirements are met by sampling and analysis, and/or process knowledge. Process knowledge consists of detailed information from existing published or documented waste analysis data or studies on processes similar to those that generated the waste, including but not limited to the following:

- Mass balance from a controlled process that has a specified input for a specified output
- Material safety data sheets (MSDSs) on unused chemical products
- Test data from a surrogate sample
- Analytical data on the waste or a waste from a similar process.
- Interview information
- Logbooks
- Procurement records
- Qualified analytical data
- Processes and/or methods
- Process flow charts
- Inventory sheets
- Vendor information
- Mass balance from an uncontrolled process (e.g., spill cleanup)
- Mass balance from a process with variable inputs and outputs (e.g., washing/cleaning methods).

This information will be sufficient to quantify constituents and characteristics to safely manage in compliance with LLBG acceptance criteria and WAC 173-303. The LLBG acceptance criteria is defined as the requirements found in this WAP and the associated LLBG dangerous waste permit application Part A.

1.1.1.3 Description of Performance Evaluation System (PES)

The PES acting as an agent of LLBG determines the initial physical screening frequency of each waste stream. PES provides a periodic status of an individual generator's performance for waste received. PES provides a mechanism for determining corrective actions, resolving waste acceptance issues, and physical screening frequency adjustments when a conformance issue has been discovered for newly generated waste.

1.1.1.3.1 Initial Physical Screening Frequency Determination

The initial physical screening frequency is determined based on the following process.

- Personnel responsible for waste receipt at the LLBG review the generator waste profile information to determine the relative potential for misdesignation or inappropriate segregation based on all relevant information, including any previous experience with the generator. Based on this review, any concerns are identified associated with the following criteria:
 - documented waste management program
 - waste stream characterization information
 - potential for inappropriate segregation.
- Based on the identification of concerns during the review, an initial physical screening frequency is established for the new generator's waste stream based on the following criteria:
 - Initial physical screening frequency of, at a minimum, 20 percent: No concerns identified (e.g., cleanup of contaminated soil where the soil has been well characterized and no other waste generation processes are occurring at that location)
 - Initial physical screening frequency of, at a minimum, 50 percent: Concern(s) identified in one criterion
 - Initial physical screening frequency of 100 percent: Concerns identified in two or more criteria.

1.1.1.3.2 Performance Evaluation

A performance evaluation is used to trend a generator's waste acceptance performance and is used to adjust the generator's overall physical screening frequency. This evaluation, identified as an integral part of the QA program, is objective and considers the conformance issues documented during the Preshipment Review and Verification functions. The PES maintains processes that: (1) perform evaluations based on conformance issues identified, (2) evaluate unsatisfactory performance for corrective actions, and (3) adjust physical screening rates accordingly.

The performance evaluation is conducted and subsequently accepted by PES team, and the documentation maintained in accordance with Section 8.0. Performance evaluation frequency is based on the generators historical performance and the waste stream in involved.

1.1.1.3.3 Conformance Issue Resolution

Conformance issues could result in a waste container that does not meet the LLBG waste acceptance criteria. A conformance issue is any discrepancy identified during the confirmation process with waste package documentation, a waste package, or a shipment. Discrepancies can be identified during preshipment reviews of waste streams during the verification process. If a possible conformance issue is identified, the following actions are taken to resolve the issue.

- The PES compiles all information concerning the possible conformance issue(s).

- The generator is notified and requested to supply additional knowledge that may assist in the resolution of the concern(s). If the generator supplies information that resolves the concern(s) identified, no further action is required.
- On determination that a conformance issue has been identified during verification, the LLBG personnel and the generator discuss the conformance issue and identify the appropriate course of action to resolve the container in question, e.g., pick another sample set, return the container, divert the container to another TSD unit that can accept the container and resolve the issue, or the generator resolves the issue at the LLBG. If the conformance issue(s) results in a waste stream failure, the physical screening frequency for all waste streams that have the potential to exhibit a similar conformance issue from the generator are adjusted to 100 percent for the next shipment until the issue(s) can be adequately addressed.
- The LLBG requests the generator to provide a corrective action plan (CAP) that clearly states the reason for the failure and describes the actions to be completed to prevent recurrence. The generator could request a reduction in verification of unaffected streams. This request must be accompanied by a justification that identifies why this stream(s) would not exhibit the same conformance issue.
- The LLBG reviews the CAP and stream justification for adequacy. If the CAP is inadequate, the generator remains at a physical screening rate of 100 percent. If the stream justification is adequate, the LLBG could provide an alternative frequency as denoted in Section 1.1.1.3.2.

1.1.1.3.4 Process for Reducing the Physical Screening Frequency

Physical screening (Section 2.2.2) rate frequencies and changes to those frequencies could be applied to a specific waste stream, to a specific contractor, or to a specific offsite generator based on the circumstances surrounding the conformance issue. After the initial physical screening frequency for a given waste stream has been established or increased, the physical screening frequency can be reduced in accordance with the following process.

The physical screening frequency is reduced in three steps. Reduction for all steps is based on the ability to demonstrate that five containers from the waste stream in question pass verification. In addition, reduction to the minimum frequency requires that the LLBG documents an acceptable evaluation of the corrective action plan. At no time will the physical screening frequency be reduced below 5 percent for waste generated onsite or below 10 percent for offsite generators.

Step 1) Reduce frequency by up to 66 percent after five containers from the waste stream in question pass verification.

Step 2) Reduce frequency established in Step 1 by up to 50 percent or to the minimum allowable whichever results in a greater frequency after five containers from the waste stream in question pass verification.

Step 3) Reduce frequency established in Step 2 to the minimum allowable after five containers from the waste stream in question pass verification. The LLBG documents an acceptable evaluation of the corrective action plan.

The physical screening rate reduction is established during periodic PES team evaluations, and the documentation is maintained according to Section 8.0 of this WAP. The percentage of the reduction is based on the evaluation of the relative severity of the original conformance issue, the status of the

corrective action plan, any interim actions taken by the generator, the generator's performance for this waste stream before this reduction, and/or other factors deemed relevant.

1.1.2 Operating Conditions

The LLBG shall ensure that all waste management operations are conducted in accordance with design and engineering requirements of waste management structures and equipment, and with all equipment manufacture specifications and operating processes. Before treatment and/or storage of waste, the LLBG shall have processes in place to ensure safe management of the waste. These processes shall consider actual or potential risks posed by the waste and treatment and/or storage equipment. The LLBG shall conduct all waste treatment and/or storage according to these processes and comply with labeling, container management, and inspection requirements of WAC 173-303-630.

1.2 Identification and Classification of Waste

Waste is accepted for disposal (mixed waste) and/or storage (mixed and dangerous) in LLBG except for the following waste types:

- Waste is not accepted for disposal when the waste contains free-standing liquid unless all free-standing liquid:
 - Has been removed by decanting or other methods
 - Has been mixed with sorbent or stabilized (solidified) so that free-standing liquid is no longer observed
 - Has been otherwise eliminated
 - Container is very small, such as an ampoule
 - Container is a labpack and is disposed in accordance with WAC 173-303-161 or 40 CFR 264.316
 - Container is designed to hold free liquids for use other than storage, such as a battery or capacitor.

There could be cases in which small amounts of residual liquids are present in mixed waste containers because condensate has formed following packaging or free liquids remain in debris items (e.g., pumps, tubing) even after draining. When it is not practical to remove this residual liquid or impossible to sample to determine if liquids are present, the liquid must be eliminated to the maximum extent practical by draining and placing a quantity of sorbent sufficient to sorb all residual liquids in the bottom of the container or dispersed among the waste.

Free liquid is determined by SW-846, *Test Methods for Evaluating Solid Waste: Physical/Chemical Method*, Method 9095 (Paint Filter Liquids Test) [WAC 173-303-140(4)(b) and 40 CFR 264.314(d)] only for waste that has the potential for free liquid formation.

- Gaseous waste is not accepted for disposal if the waste is packaged at a pressure in excess of 1.5 atmospheres at 20°C.
- Pyrophoric waste is not accepted for disposal. Waste containing less than 1 weight percent pyrophoric material partially or completely dispersed in each package is not considered pyrophoric for the purposes of this requirement.
- Solid acid waste is not accepted for disposal [WAC 173-303-140(4)(c)].
- Untreated extremely hazardous waste is not accepted for disposal. Extremely hazardous waste that has been treated could be disposed and/or stored in accordance with Revised Code of Washington (RCW) 70.105.050(2), "Hazardous Waste Management".

- Untreated organic/carbonaceous waste is not accepted for disposal [WAC 173-303-140(4)(d)] except as allowed by WAC 173-303-140(4)(d)(iii).
- Waste not meeting the applicable treatment standards is not accepted for disposal [40 CFR 268 and WAC 173-303-140(4)].
- Mixed waste that is incompatible with the liner system is not accepted in this TSD unit. Table 1-2 provides a list of chemicals that have been shown to be incompatible with the liner material in concentrated form. In general, mixed waste that meets federal and state treatment standards is compatible with the TSD unit liner system. Waste streams are evaluated during pre-transfer/pre-shipment review to ensure that the waste streams do not contain constituents incompatible with the liner system in concentration sufficient to degrade the liner.

72-38-4	Vinylidene chloride
77-82-9	Thionyl chloride
8014-93-7	Sulfuric acid (fuming)
7446-11-9	Sulfur trioxide
78-87-2	Propylene dichloride
118-74-1	Perchloroethylene
92-07-3	Dimethylamine
79-01-6	Ethylene dichloride
72-00-3	Ethyl chloride
7782-41-4	Fluorine
7782-50-5	Chlorine
7732-05-6	Bromine

U.S. EPA - Chemical Abstracts Service

The Part A, Form 1, permit application for this TSD unit identifies dangerous waste numbers, quantities, and design capacity (DOE-RI-88-21, *Abstract Facility Dangerous Waste Unit A Permit Application*).

Refer to Section 1.1 for information on when ignitable, reactive, or incompatible waste is stored.

1.1.BC manager waste that has been treated to meet TDR, in addition to the waste received at 1.1.BC for disposal and/or storage, mixed and dangerous waste. This waste material consists of items such as but not limited to personal protective equipment (PPE), tags, and spent equipment contaminated with dangerous cleaning agents, lubricants, paints, or other dangerous materials. Process knowledge, field screening, and sampling and analysis are used as appropriate to characterize these waste materials. Field screening and sampling are in accordance with this WAP and occur at the point of waste generation or at the location where the waste materials are stored.

Biological waste received from generators could consist of animal remains that were used for experiments. This type of waste can be analyzed using NDE or visual examination.

1.1.1 Dangerous Waste Numbers, Quantities, and Design Capacity

The 1.1.BC Part A identifies dangerous waste number, quantity, and design capacity.

1

Table 1-1. Chemicals Incompatible With the High-Density Polyethylene Liner (in concentrated form).

Chemical	CAS Number
Amyl chloride	543-59-9
Aqua regia	8007-56-5
Bromic acid	15541-45-4
Bromobenzene	108-86-1
Bromoform	75-25-2
Calcium bisulfite	13780-03-5
Calcium sulfide	20548-54-3
Diethyl benzene	25340-17-4
Diethyl ether	60-29-7
Bromine	7726-95-6
Chlorine	7782-50-5
Fluorine	7782-41-4
Ethyl chloride	75-00-3
Ethylene trichloride	79-01-6
Nitrobenzene	98-95-3
Perchlorobenzene	118-74-1
Propylene dichloride	78-87-5
Sulfur trioxide	7446-11-9
Sulfuric acid (fuming)	8014-95-7
Thionyl chloride	7719-09-7
Vinylidene chloride	75-35-4

CAS = Chemical Abstracts Service

2

3

4

The Part A, Form 3, permit application for this TSD unit identifies dangerous waste numbers, quantities, and design capacity (DOE/RL-88-21, *Hanford Facility Dangerous Waste Part A Permit Application*).

5

6

7

Refer to Section 7.2 for precautions taken when ignitable, reactive, or incompatible waste is stored.

8

9

LLBG manages waste that has been treated to meet LDR. In addition to the waste received at LLBG for disposal and/or storage, mixed and dangerous waste. This waste material consists of items such as but not limited to personal protective equipment (PPE), rags, and spent equipment contaminated with dangerous cleaning agents, lubricants, paints, or other dangerous materials. Process knowledge, field screening, or sampling and analysis are used as appropriate to characterize these waste materials. Field screening and sampling are in accordance with this WAP and occur at the point of waste generation or at the location where the waste materials are stored.

10

11

12

Biological waste received from generators could consist of animal remains that were used for experiments. This type of waste can be analyzed using NDE or visual examination.

13

14

15

1.2.1 Dangerous Waste Numbers, Quantities, and Design Capacity

16

The LLBG Part A identifies dangerous waste numbers, quantities, and design capacity.

17

18

19

20

21

22

Waste is designated pursuant to WAC 173-303 using manufacturer's product information, MSDS, laboratory analysis, and reference material such as *Registry of Toxic Effects of Chemical Substances* (NIOSH). Waste also is characterized in accordance with the requirements of 40 CFR 761.

Designation for Waste Types Reprocessed at LLBG:

Number	References
U and P numbers	WAC 173-303-9903-9904
F numbers	WAC 173-303-9904
WPCB	WAC 173-303-9904
D001	WAC 173-303-090(5)
D002	WAC 173-303-090(6)
D003	WAC 173-303-090(7)
D004 through D043	WAC 173-303-090(8)
WT01 and WT02	WAC 173-303-100 and 104
WP01, WP02, and WP03	WAC 173-303-100 and 104
WSC2 (excluding acid)	WAC 173-303-090(6)/104

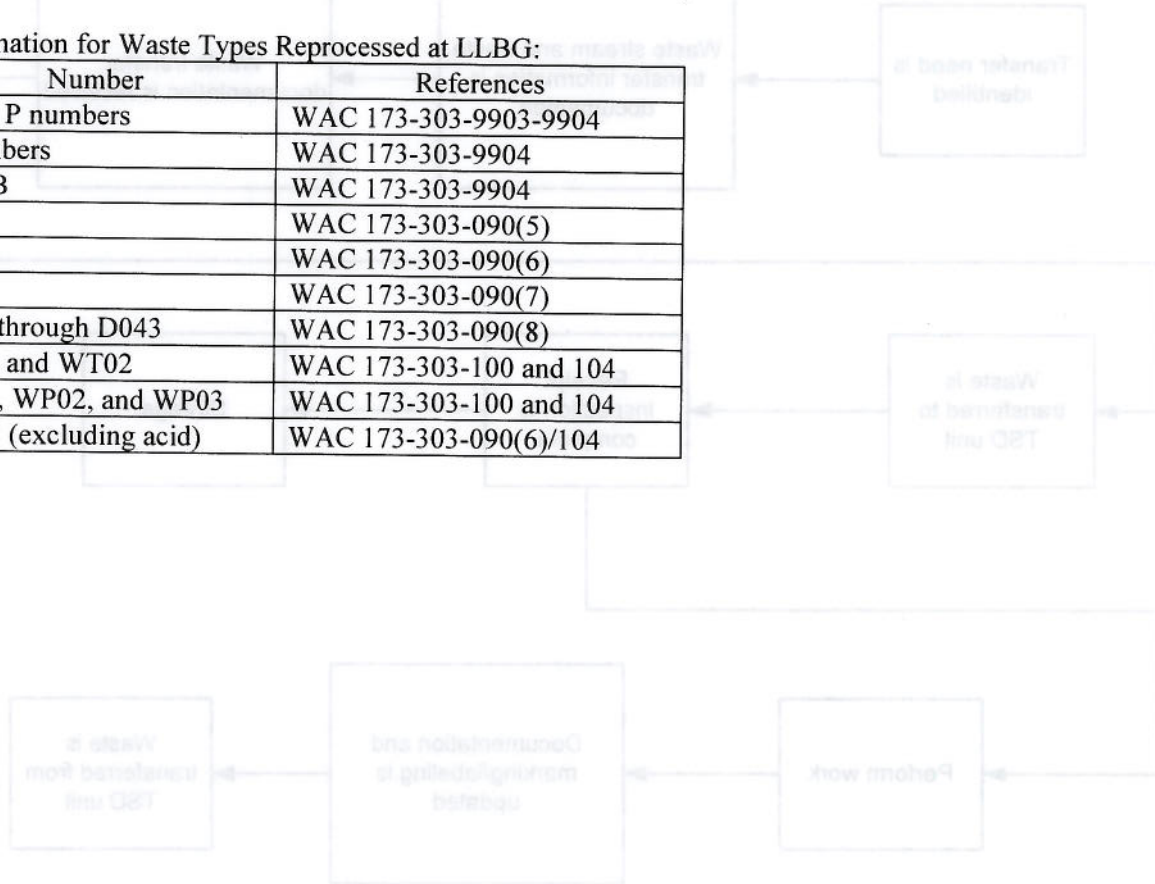


Figure 1-1: Waste Transfer Between Solid Waste Operations Complex TSD Unit

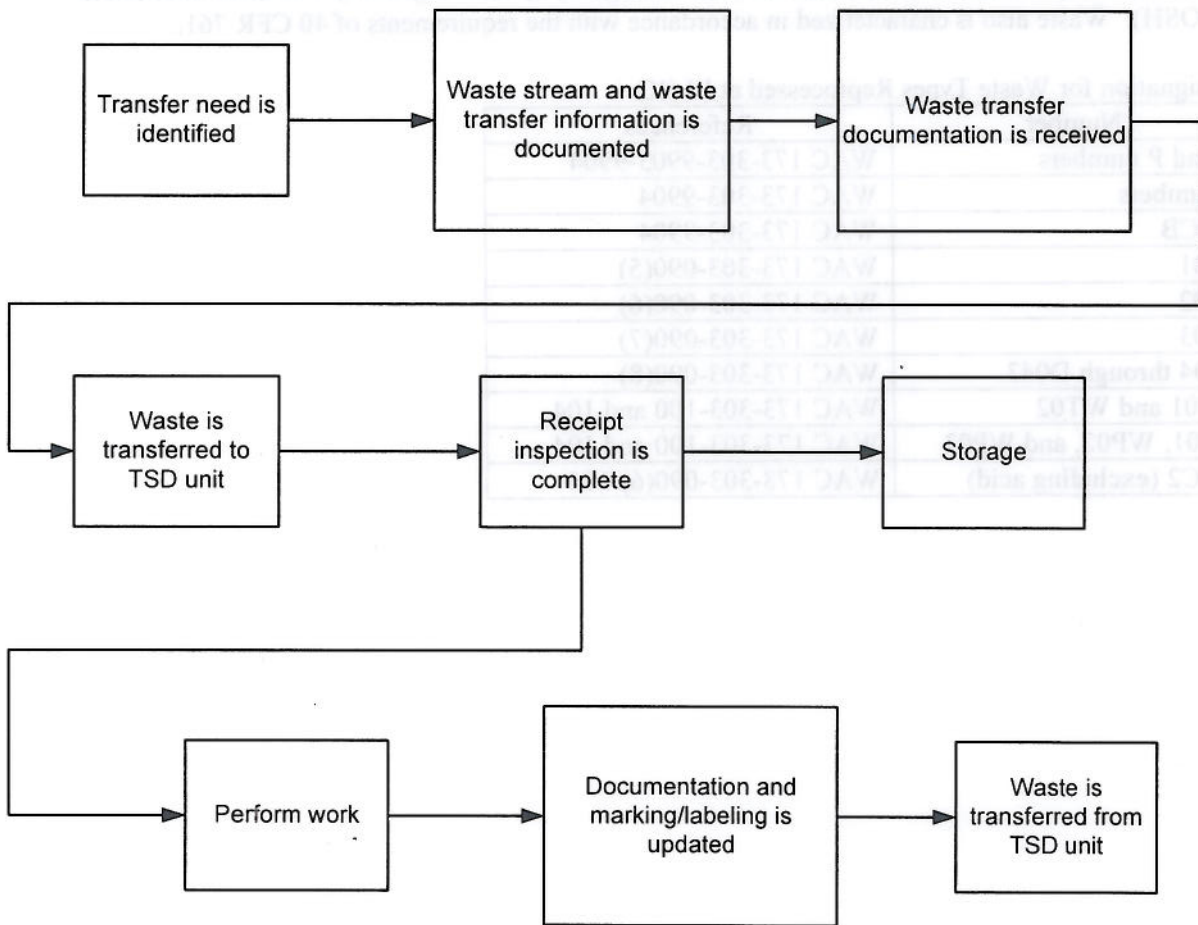
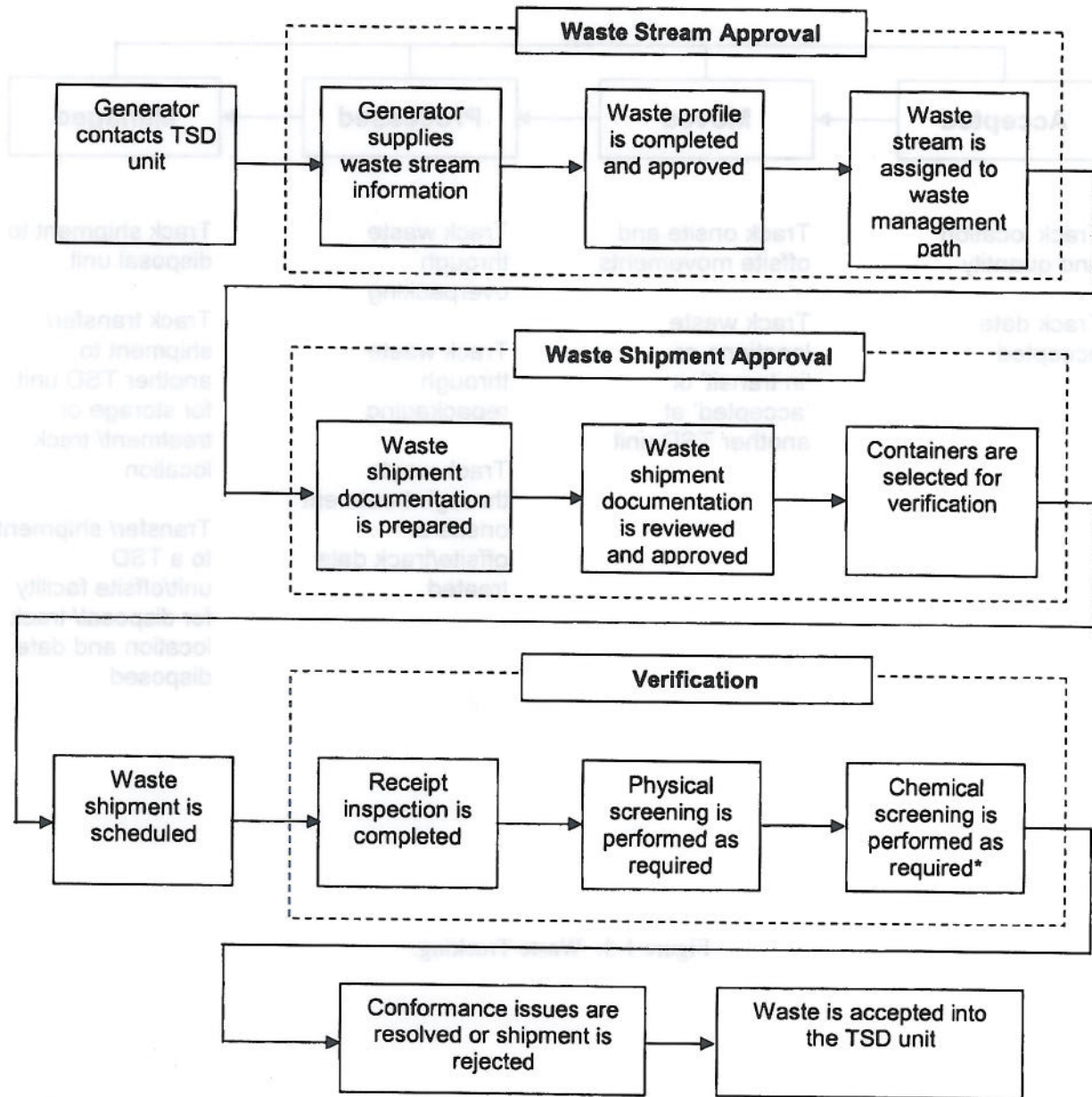


Figure 1-1. Waste Transfers Between Solid Waste Operations Complex TSD Units.



*Verification can occur at the generating unit prior to shipment

Figure 1-2. Waste Confirmation and Acceptance Process for Newly Generated Waste.

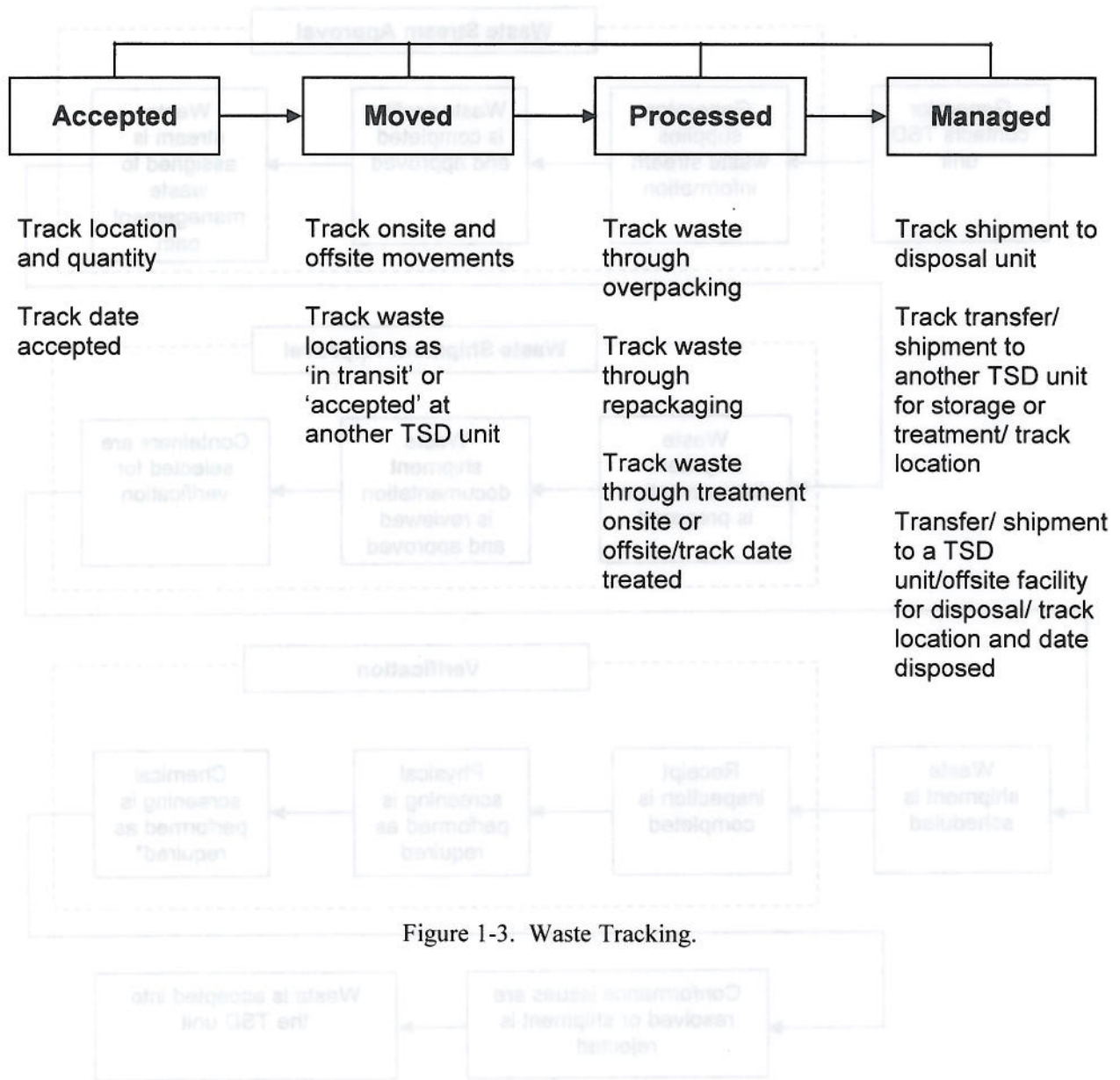


Figure 1-3. Waste Tracking.

2.0 CONFIRMATION PROCESS

The confirmation process used to meet WAC 173-303-300 requirements includes completing appropriate pre-shipment reviews and verification steps and/or parameters as described in this section and indicated on Figure 2-1. The confirmation process for onsite generators and offsite generators is detailed in Section 2.1 and 2.2 for SWOC-generated waste is detailed in Section 2.8, WRP waste is detailed in Section 2.6.1 and for LLBG-generated waste is detailed in Section 2.8.

2.1 Pre-Shipment Review

Pre-shipment review takes place before waste can be scheduled for transfer or shipment to LLBG. The review focuses on whether the waste stream is defined accurately, meets the LLBG waste acceptance criteria, and the LDR status is determined correctly (for mixed waste subject to LDR treatment standards refer to Section 7.3.1). Only waste determined to be acceptable for storage and/or treatment is scheduled. This determination is based on the information provided by the generator. The pre-shipment review consists of the waste stream approval and waste shipment approval process. The following sections discuss the pre-shipment review process. The information obtained from the generator during the pre-shipment review, at a minimum, includes all information necessary to safely store and/or treat the waste. The pre-shipment review ensures the waste has been characterized for purposes of evaluation against the LLBG waste acceptance criteria, and that the data provided qualify as 'knowledge' (Section 2.1.3).

2.1.1 Waste Stream Approval Process

The waste stream approval process consists of reviewing waste stream information supplied on a waste stream profile or other approved processes and attached analysis. At a minimum, the waste stream profile or other approved processes requests the following information:

- Generator information (e.g., name, address, point-of-contact, telephone number)
- Waste stream name
- Waste generating process description
- Chemical characterization information (e.g., characterization method(s), chemicals present, concentration ranges)
- Designation information
- For mixed and dangerous waste (WRP waste is excluded) LDR information including identification of underlying hazardous constituents (UHCs) if applicable
- Waste type information (e.g., physical state, absorbents used, inert materials, stabilizing agents used)
- Packaging information (e.g., container type, maximum weight, size)
- Attachments could consist of container drawings, process flow information, analytical data, etc.

This information is reviewed against the LLBG waste acceptance criteria to ensure the waste is acceptable for receipt. If conformance issues are found during this review, additional information is requested that

could include analytical data or a sample to be analyzed. If the waste cannot be received, the LLBG will pursue acceptance of the waste at an alternative TSD unit or request the generator to pursue acceptance at an offsite facility or another approved facility.

On determination that the waste is acceptable for receipt at the LLBG, the LLBG assigns the waste on the profile or other approved processes to a waste management path and establishes a waste verification frequency based on the PES requirements found in Sections 1.1.1.3 and 2.2.3.1.

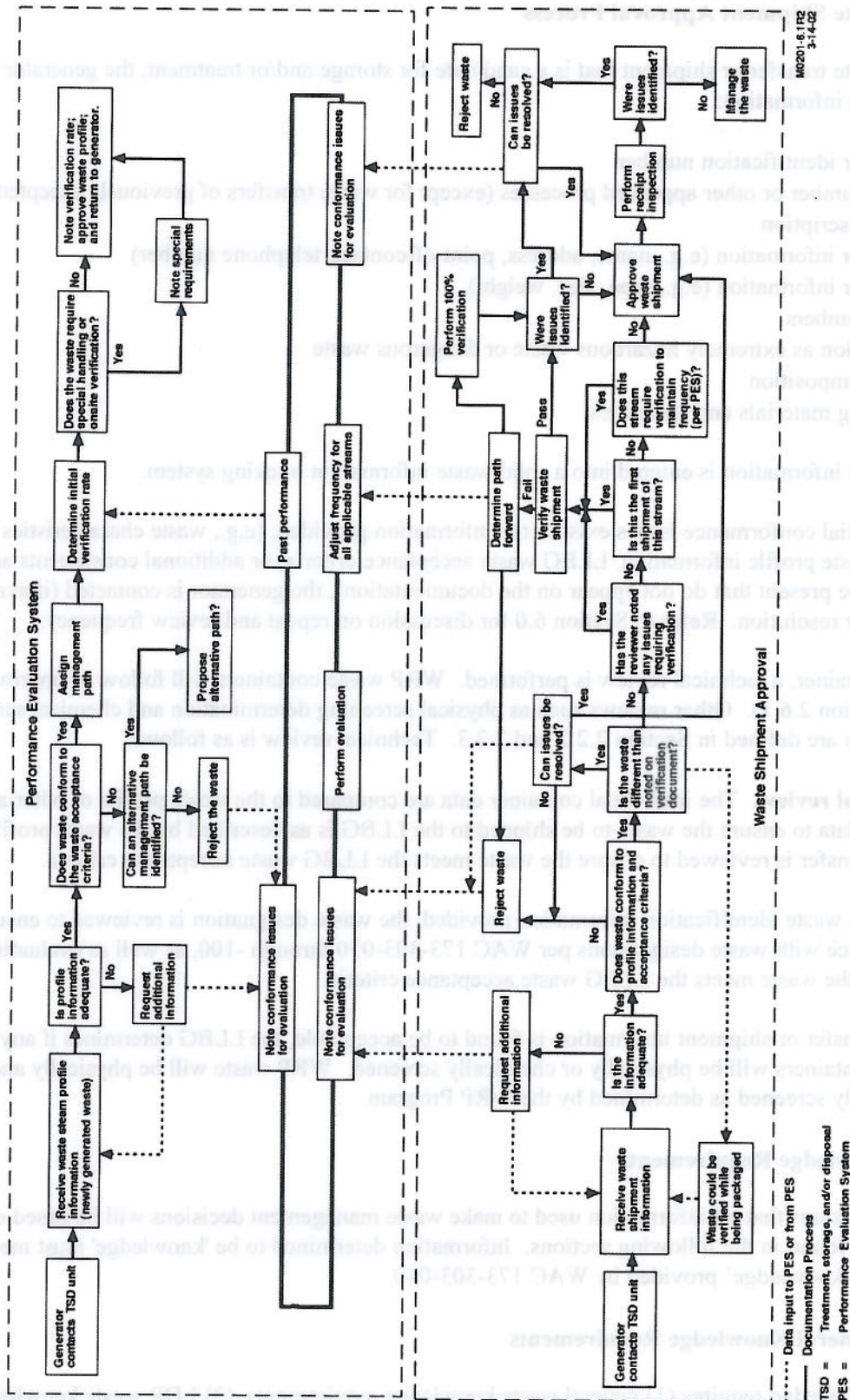


Figure 2-1. Waste Acceptance Process.

2.1.2 Waste Shipment Approval Process

For each waste transfer or shipment that is a candidate for storage and/or treatment, the generator provides the following information:

- Container identification number
- Profile number or other approved processes (except for waste transfers of previously accepted waste)
- Waste description
- Generator information (e.g., name, address, point-of-contact, telephone number)
- Container information (e.g., type, size, weight)
- Waste numbers
- Designation as extremely hazardous waste or dangerous waste
- Waste composition
- Packaging materials and quantities.

The pertinent information is entered into a solid waste information tracking system.

Where potential conformance issues exist in the information provided, (e.g., waste characteristics do not match the waste profile information, LLBG waste acceptance criteria, or additional constituents are expected to be present that do not appear on the documentation), the generator is contacted (if available) by the LLBG for resolution. Refer to Section 6.0 for discussion on repeat and review frequency.

For each container, a technical review is performed. WRP waste containers will follow an approved process (Section 2.6.1). Other reviews such as physical screening determination and chemical screening determination are defined in Section 2.2.2 and 2.2.3. Technical review is as follows:

- **Technical review.** The individual container data are compared to the waste profile or other approved process data to ensure the waste to be shipped to the LLBG is as described by the waste profile. Every transfer is reviewed to ensure the waste meets the LLBG waste acceptance criteria.

Based on waste identification information provided, the waste designation is reviewed to ensure compliance with waste designations per WAC 173-303-070 through -100, as well as evaluating whether the waste meets the LLBG waste acceptance criteria.

If the transfer or shipment information is found to be acceptable, the LLBG determines if any of the waste containers will be physically or chemically screened. WRP waste will be physically and/or chemically screened as determined by the WRP Program.

2.1.3 Knowledge Requirements

The LLBG ensures that all information used to make waste management decisions will be based on the requirements found in the following sections. Information determined to be 'knowledge' must meet the definition of 'knowledge' provided by WAC 173-303-040.

2.1.3.1 General Knowledge Requirements

Adequate knowledge requires (1) general waste knowledge requirements, (2) LDR waste knowledge requirements, and/or (3) waste knowledge exceptions.

- (1) **General Waste Knowledge Requirements for Designation and Waste Management.** At a minimum, the generator supplies enough information for the waste to be treated and/or stored at LLBG. The minimum level of knowledge consists of designation data where the constituents or knowledge of the waste's generating source (in the case of wastes potentially from listed sources) causing a dangerous waste number to be assigned are quantified, and that data addresses any LLBG operational parameters necessary for proper management of the waste.

When process knowledge indicates that constituents, which if present in the waste might cause the waste to be regulated, are input to a process but not expected to be in the waste, sampling and analysis can be performed to ensure the constituents do not appear in the waste above applicable regulatory levels. This requirement can be met through chemical screening. This sampling and analysis is required only for initial characterization of the waste stream.

When the available information does not qualify as knowledge or is not sufficient to characterize a waste for management, the sampling and testing methods outlined in WAC 173-303-110 are used to determine whether a waste designates as ignitable, corrosive, reactive, and/or toxic, and the sampling and testing methods will be used as applicable to determine whether the waste contains free liquids. If the analysis is performed to complete characterization after acceptance of the waste by the LLBG, then this WAP governs the sampling and testing requirements.

- (2) **Waste Knowledge Requirements for LDR Compliance.** Waste is stored at the LLBG while awaiting analytical results for LDR requirements. The LLBG portion of the operating record contains all information required to document that the appropriate treatment standards have been met or the treatment required to meet the LDR treatment standards, unless otherwise specified in this section.

For the purposes of this WAP, a representative sample is required to demonstrate compliance with a concentration-based treatment standard (refer to Section 4.0). Corroborative testing for the sample could be accomplished in the following manner.

- Generators could use onsite laboratories or other laboratories to obtain data that could be used as basis to certify that the waste meets concentration-based LDR treatment standards. For waste that must meet method based LDR treatment standards, information must be supplied on the treatment methods necessary to meet LDR requirements and comply with WAC 173-303-380(1)(j),-(k),-(n), and -(o).
- The LLBG uses these analytical data to meet applicable requirements found in WAC 173-303-140(4).

- (3) **Waste Knowledge Exceptions.** The LLBG is designed to provide information necessary to further disposition the waste (e.g., repackage, designate, segregate, sample, and analyze). The LLBG shall ensure sufficient information is available (D001, D002, D003, and incompatibility) and operation safeguards are in place to safely process waste. If sufficient information is not available, the waste will enter the discrepant container management process described in Section 2.5 in order to obtain the necessary information.

2.1.3.2 Methodology to Ensure Compliance with Land Disposal Restrictions Requirements for Mixed and Dangerous Waste

All generators of mixed and dangerous waste are subject to LDR requirements and are required to submit all information notifications and certifications described in WAC 173-303-380(1)(j),-(k),-(n), and -(o).

Mixed and dangerous waste not meeting the treatment standards, but meeting the LLBG waste acceptance

criteria, can be stored at the LLBG (refer to Section 1.1.1.1). The following are general requirements for offsite notifications or onsite information and supporting documentation.

- The waste is subject to LDR and the generator has treated the waste. The generator supplies the appropriate LDR certification information (WAC 173-303-140).
- The waste is subject to LDR and the generator has determined that the waste meets the LDR for disposal. The generator develops the certification based on process knowledge and/or analytical data and supplies the appropriate LDR certification information necessary to demonstrate compliance with the LDR treatment standards of WAC 173-303-140. State-only LDRs do not require this type of certification.
- The waste is subject to LDR and requires further treatment to meet applicable treatment standard.
 - The generator supplies additional information concerning the waste and details any treatment necessary to meet applicable treatment standards.
 - If waste is treated to meet state-only or federal LDRs at the LLBG, the LLBG prepares information necessary to meet WAC 173-303-380(1)(k) (refer to Section 7.3).

A representative sample of the waste must be submitted for analysis to ensure that concentration-based LDR treatment standards are met. This sample could be taken by the LLBG or the generator, and is required to comply with the treatment standards contained in 40 CFR 268.40 and 268.48 for UHCs.

2.2 Verification

Verification is an assessment performed by the LLBG to substantiate that the waste stream received at the LLBG is the same as represented by the analysis supplied by the generator for the pre-shipment review. Verification is performed on waste received by the LLBG. Verification includes container receipt and inspection. In addition, select containers could be subject to physical screening, and chemical screening. Waste is not accepted by the LLBG for storage and/or treatment until the required elements of verification have been completed, including evaluation of any data obtained from verification activities. Documentation reviewed as part of verification activities could include manifest or onsite shipment document, container inventory documentation, a container listing report, visual verification records, screening analyses, and the waste profile.

All conformance issues identified during the verification process are resolved in accordance with Section 1.1.1.3.3.

Containers previously used to hold non-acute dangerous waste will be evaluated to determine if they are empty by using the following criteria: A container or inner liner is "empty" when all wastes in it have been taken out that can be removed using practices commonly employed to remove materials from that type of container or inner liner (e.g., pouring, pumping, aspirating, etc.) and, no more than one inch of waste remains at the bottom of the container or inner liner, or the volume of waste remaining in the container or inner liner is equal to three percent or less of the container's total capacity, or, if the container's total capacity is greater than one hundred ten gallons, the volume of waste remaining in the container or inner liner is no more than 0.3 percent of the container's total capacity.

The presence of free liquids which readily separate from the solid waste portion of dangerous waste may be determined by either the paint filter test or through NDE results.

2.2.1 Container Receipt Inspection

Container receipt inspection is a mandatory element of the verification process. Therefore, 100 percent of each shipment (including onsite transfers) is inspected at the LLBG for possible damage or leaks, complete labeling, and if present, tamper-resistant seals are intact (Sections 2.2.2 and 2.2.3). This is to ensure that the shipment: (1) is received at the LLBG in good condition, (2) is the waste indicated on the transfer or shipping papers, (3) has not been opened after physical and/or chemical screening was performed, and (4) is complete. When a conformance issue exists, a case-by-case determination is performed and the appropriate action is taken based on the severity of the issue. One of the following actions may be taken as appropriate, in response to a conformance issue:

- Implementation of the contingency plan (DOE/RL-94-02) per the *Building Emergency Plan for Low-Level Burial Grounds* (HNF-IP-0263-LLBG).
- Conformance issues where additional information is needed to safely manage the waste are resolved before verification continues.
- Continuation of verification for waste with conformance issues not meeting the above criteria.

2.2.2 Physical Screening Process

Physical screening is used as a verification element. This section describes the requirement pertaining to methods, frequency, and exceptions concerning the use of physical screening as a verification activity. Physical screening could be performed before the waste is shipped to the LLBG. When physical screening is performed at a location not within the SWOC TSD units, tamper-resistant seals are applied to each container when examined. Upon receipt at the LLBG, tamper-resistant seals are verified as intact to ensure that no changes could have occurred to the waste content. The requirements for adding and/or removing tamper-resistant seals are maintained through an established program. Documentation shall be maintained in the LLBG operating record.

Selection and interpretation of the appropriate physical screening method(s) are conducted by personnel who are trained as required by the *LLBG Dangerous Waste Training Plan* (HNF-1221). Each physical screening method is performed by trained personnel according to *LLBG Dangerous Waste Training Plan* (HNF-1221).

2.2.2.1 Physical and Chemical Screening Determination

Processes must be maintained describing the activities for selecting containers for physical/chemical screening. Authoritative/directive means of selecting containers for physical/chemical screening are used based on the pre-shipment and/or waste stream review process. The selection is based on the contents listed in the associated shipment/waste stream documentation, the variation within and experience with the specific waste type.

Two criteria are used in making the selection. The first criterion is based on whether pre-shipment review activities (document and characterization review) identify areas of potential concern. The second criterion is reviewing the current physical screening percentage (calculated according to Section 2.2.2.3) of containers offered for receipt from said waste stream from said generator that have been offered over the past 12 months or the date of the last physical screening adjustment, whichever occurs last. The rate will be applied as compared to those that have been physically screened. This criterion ensures that the minimum physical screening rates required by this WAP are met.

The number of containers selected for physical screening per waste stream is determined by comparing the calculated percentage rate which is then adjusted according to the PES. This selected group of containers constitutes a sample set.

On determining whether the waste container(s) will be verified, the container(s) is scheduled for shipment.

2.2.2.2 Physical Screening Methods

The following physical screening methods, comply with the requirement to verify a waste.

1. Visual inspection (opening the container)
2. NDE.

Refer to Section 2.2.5 for QC pertaining to physical screening. (Refer to Section 3.1 for the criteria and rationale for choosing a physical screening method.)

Waste packaging that is witnessed by the LLBG or its representative at a non-SWOC location is considered to have met the physical screening requirements denoted in this WAP, provided that the program meets the requirements of WAC 173-303 and the witness is qualified to determine the waste meets acceptance requirements. On closure of the container, tamper-resistant seals must be applied to ensure the integrity of the contents.

2.2.2.3 Physical Screening Frequency

The minimum physical screening frequency is 5 percent for onsite generators, applied per waste stream per generator per year. For offsite generators, the minimum physical screening frequency is 10 percent per waste stream per generator per year. The LLBG adjusts the physical screening frequency for generators based on objective performance criteria (refer to Section 1.1.1.3.1).

If a container fails verification, the waste stream physical screening frequency will be raised to 100 percent with the next containers offered. Subsequent containers offered will be evaluated through the PES for verification rates, as described in Section 1.1.1.3 of this WAP.

2.2.2.4 Physical Screening Exceptions

The following are exceptions to the physical screening process outlined previously.

- Shielded, classified, and remote-handled mixed waste are not required to be physically screened; however, the LLBG performs a more rigorous documentation review and obtains the raw data used to characterize the waste (less than 1 percent of current waste receipts). For classified waste, it is necessary to have an appropriate U.S. Department of Energy security clearance and a need to know the information as defined by the classifying organization or agency.
- Waste that physically cannot be screened at the LLBG or an associated screening facility must be physically screened at the generator location [e.g., large components, containers that can not be opened, for as low as reasonably achievable (ALARA) purposes, or does not fit into a NDE unit]. Physical screening at the generator location consists of observing the packaging of the waste. If no location can be found to perform the physical screening, no screening is required.
- Waste that is packaged by a trained LLBG -delegated representative(s) is considered to have met the physical screening requirements as denoted within this WAP.

- Waste that has been packaged and physically screened at a SWOC TSD unit.

2.2.3 Chemical Screening Process

Chemical screening is used as a verification element. This section describes methods, frequency, and exceptions for chemical screening. Chemical screening could be performed before the waste is shipped to the LLBG. When screening is performed at a location not within the SWOC TSD units, tamper-resistant seals are applied to each container examined and, on receipt at LLBG, verified as acceptable to ensure that no changes could have occurred to the waste content. Processes are maintained by the LLBG detailing the requirements for adding and/or removing tamper-resistant seals. Documentation shall be maintained in the LLBG operating record.

Qualified personnel conduct selection and interpretation of chemical screening methods. Unless otherwise noted, tests are qualitative, not quantitative. The objective of screening is to obtain reasonable assurance that the waste generally consistent with the description on the shipping documentation. The following tests are selected depending on the waste matrix and the applicability of the method.

- pH
- Peroxide
- Oxidizer
- Water reactivity
- HOC (chlor-n-oil/water/soil)
- Headspace
- Sulfide
- Cyanide
- Paint filter.

Refer to Section 2.2.5 for QC information for chemical screening. Processes are maintained by the LLBG that define the basis for selecting screening tests.

2.2.3.1 Chemical Screening Frequency

At a minimum, 10 percent of the mixed or dangerous waste containers verified by physical screening (Section 2.2.2) must be screened chemically. LLBG obtains a representative sample, which could be a grab sample.

Small containers of waste (labpacks), not otherwise identified in the exceptions and packaged in accordance with 40 CFR 264.316, 40 CFR 265.316, and WAC 173-303-161 are screened chemically in accordance with the chemical screening frequency of the waste stream as determined by the PES team (Section 1.1.1.3). Inner containers are segregated by physical appearance. At least one container from each group (or three containers if all are similar) are screened chemically.

2.2.3.2 Chemical Screening Exceptions

The following are cases in which chemical screening is not required.

- Small containers of waste in overpacked containers (labpacks) packaged in accordance with WAC 173 303-161 and not prohibited under LDR specified in WAC 173-303-140

- Waste exempted from the physical screening requirements (Section 2.2.2.4)
- Commercial chemical products in the original product container(s) (e.g., off-specification, outdated, or unused products)
- Chemical containing equipment removed from service, (e.g., ballasts, batteries)
- Waste containing asbestos
- Waste, environmental media, and/or debris from the cleanup of spills or release of single substance or commercial product or otherwise known material (e.g., material for which an MSDS can be provided)
- Confirmed noninfectious waste (e.g., xylene, acetone, ethyl alcohol, isopropyl alcohol) generated from laboratory tissue preparation, slide staining, or fixing processes
- Hazardous debris as defined in WAC 173-303-040
- Other special cases could be exempted on a case-by-case basis.

2.2.4 Sampling for Confirmation Screening

Sampling is performed in accordance with WAC 173-303-110(2). A representative sample is obtained for chemical screening. The chemical screening methods described in Section 3.0 do not require any sample preservation methods because the screening tests are performed at the time and location of sampling, or as soon as possible thereafter. During the interim period, the samples are stored in a manner that maintains chain of custody and protects the sample composition.

2.2.5 Quality Assurance and Quality Control for Confirmation Process

The following QA and QC elements are used by the LLBG to ensure confirmation activities provide sufficient data to provide an indication that waste received is as described in the shipping documentation. Physical/chemical screening methods shall have sufficient performance levels to yield valid decisions when considering method variability (precision and accuracy). Data quality objectives have been established with Ecology in accordance with TPA Action Plan Section 6.5 (Ecology et al. 2003) and have been documented and reflected in this WAP. In addition, all screening equipment requiring calibrations shall be checked before use to ensure calibration dates are current and equipment is functioning properly. This check will be documented in equipment log books. Personnel performing screening activities are properly trained and current certifications are on record. During screening activities strict compliance with applicable industrial hygiene and safety standards is mandatory.

2.2.5.1 Physical Screening Quality Control

This section describes the QC used by LLBG to ensure that quality data are obtained when performing physical screening methods identified in Section 2.2.2, except visual inspection. Physical screening QC is used only to ensure that quality data are obtained when performing NDE. Visual inspection does not consist of the use of instrumentation or chemical tests. QC objectives for visual inspection are obtained through the appropriate training.

The following QC elements apply to NDE used for physical screening:

- A penetration test is performed when image data generating components are changed to document system capability has not changed.
- A resolution test is performed at the beginning of a shift. A shift ends when shutdown activities are performed. A shift can be up to 24-hours.
- A radiographer is qualified per SNT-TC-IA, Level II certification of American Society of Nondestructive Testing training.
- Examination must cover 100 percent of the waste in the container.
- At minimum annually, a capability demonstration is performed on a training drum.

2.2.5.2 Chemical Screening Quality Control

The following QC elements are used when performing chemical screening.

- Appropriate sample containers and equipment are used.
 - Containers and equipment of the appropriate size that are chemically compatible with the waste and testing reagents shall be used.
- Reagent checks
 - Water that is reagent grade and from a documented source shall be used.
 - Chemicals and test kits must be labeled so that these are traceable and documented in the LLBG operating record.
 - QC checks shall be performed on each lot of test kit and associated reagents and documented in the LLBG operating record, unless a more frequent period is specified in the test kit instructions.
 - Personnel performing chemical screening are adequately trained and current qualifications/certifications are on record.

2.3 Waste Transfers Between Solid Waste Operations Complex TSD Units

Transfers from the SWOC TSD units to the LLBG may be necessary to perform verification, obtain additional knowledge to support treatment/disposal, to make the waste amenable for long-term storage, or to perform treatment. A technical review is required to ensure compliance with the LLBG waste acceptance criteria. For waste that is being transferred from the SWOC TSD units TSD units to the LLBG, the following requirements apply.

2.3.1 Waste Stream Approval Process

The waste stream must already have been approved using the process described in Section 2.1.1. Waste knowledge exceptions apply as described in Section 2.1.3.1.

For retrieval of suspect-mixed waste streams from the LLBG, sufficient information must be available to further disposition the waste. Mixed waste containers are transferred out of the LLBG to another TSD unit and ultimately received at WRAP or another approved TSD unit for packaging and/or treatment. The amount and type of data that exists for a given waste package vary widely and depend on the documentation requirements in effect when the waste was generated. The SWOC TSD unit is required to supply specific information about the waste package contents. A technical review of the records is performed as described in Section 2.3.2 and suspect dangerous waste items are identified. Suspect mixed

or dangerous waste will be evaluated and managed for safe storage until a waste designation can be completed. Additionally, a visual inspection is performed on the containers before transfer.

2.3.2 Waste Transfer Approval Process

A technical review of documentation associated with each waste container in the shipment is performed to ensure the waste meets the LLBG waste acceptance criteria. The individual container data, inclusive of all knowledge obtained on the container is compared to the LLBG's waste acceptance requirements. If necessary, the waste management path (waste specification record) previously assigned to the waste stream is updated and re-labeling/remarking is completed before the transfer. Waste is tracked through processing at the LLBG in accordance with Section 1.1.1. When characteristics of the waste change as a result of treatment or other processing, documentation will be entered into the unit-specific operating record. As new information is obtained on the waste, the container is managed to any new requirements. Updates to container data during transfer and subsequent processing activities are reflected in solid waste information tracking system, documented, and maintained in accordance with Section 8.0.

2.3.3 Verification

For container receipt inspection, 100 percent of each transfer is inspected for damage and to ensure the waste containers are those indicated on the documentation. This activity is a mechanism for identifying any document conformance issues or damaged containers before receipt/acceptance. Conformance issues identified during receipt are managed as described in Section 2.2.1.

For physical/chemical screening, once waste has been verified, additional physical/chemical screening is not required.

2.3.4 Performance Evaluation System

The performance of the generator is evaluated and documented in accordance with the PES as described in Section 1.1.1.3. The PES is used to determine physical screening frequency and determine corrective actions for conformance issues. The performance evaluation considers all newly-generated waste accepted at SWOC TSD units.

2.4 Waste Acceptance

Initial acceptance of waste occurs only after the confirmation process described in Section 3.2.0 is complete. Conformance issues identified during the confirmation process are documented and managed in accordance with Section 1.1.1.3.3. Conformance issues that must be corrected before waste acceptance include:

- Waste does not match approved profile documentation,
- Designation, physical, and/or chemical characterization discrepancy,
- Incorrect LDR paperwork,
- Packaging discrepancy,
- Manifest discrepancies as described in WAC 173-303-370(4)(a) [for offsite shipments unless Permit Conditions II.P.2 can be utilized (Ecology 2004)].

Waste that does not meet the LLBG waste acceptance criteria can be accepted when that waste is scheduled for discrepancy resolution. The discrepancy resolution activities will be tracked to completion (refer to Section 2.5).

2.5 Discrepant Container Management

During the waste acceptance process at the LLBG or another SWOC TSD unit (e.g., T Plant, WRAP, or CWC), an issue can arise where a container will be identified with a discrepant item(s) and will be called a 'discrepant container.' When a discrepant container is identified that would affect the management of the container, the following processes will be initiated:

- Liquids discovered in nonempty containers will be placed in secondary containment that meets the requirements of WAC 173-303-630(7)(a). For combination packages¹, if the liquids are only present within inner containers and no free liquids are present in the outer container, the external container will serve as secondary containment, provided that the combination package can be managed in a manner that meets the requirements of WAC 173-303-630(7)(a) and the compatibility requirements in WAC 173-303-395(1).
- An evaluation will be performed to ensure the compatibility with the other materials in the container and with the outer container in accordance with WAC 173-303-395(1)(b) and will be documented in accordance with WAC 173-303-395(1)(c). Liquids not determined to be compatible with the waste contents or the container will be segregated and placed on separate spill containment.
- If adequate information is unavailable to determine the liquids constitute an imminent hazard, the container will be segregated and placed on separate spill containment and placed as a priority for discrepancy resolution.
- For waste where the generator can be contacted, the generator will be requested to provide additional information. The container will be dispositioned by either returning it to the generator (provided it can be transported safely and compliantly) or by resolving the discrepancy on the container at a SWOC TSD unit.
- For project waste an evaluation will be performed on available historical data. In addition, interviews could be performed with project points-of-contact, NDE personnel, etc.
- Based upon the evaluation of information (hazards identified) the container will be managed in a safe configuration.
- The container will be scheduled for discrepancy resolution.

2.6 Sampling and Analysis Plans

A sampling and analysis plan (SAP) can be developed outside the WAP to support characterization of waste for various projects. A SAP will provide sufficient detail to ensure that sampling personnel and the analytical laboratory correctly implement the data quality objectives (DQOs) and quality assurance project plan requirements pursuant to TPA Action Plan Section 6.5 (Ecology et al. 2003). Sampling and analysis plans can utilize existing process knowledge and/or analytical data in combination with sampling requirements as identified in the SAP to sufficiently characterize a waste stream for acceptance into a SWOC unit.

¹ A combination package is any configuration where dangerous and/or mixed wastes are confined within (inner) containers, which are in turn stored within secondary, external (outer) containers. Examples include labpacks, certain overpacks, portable spill pallets, or any container configuration that has an outer container with one or more inner containers.

2.7 Waste Stream Approval Process for WRP Waste

The waste stream approval process consists of reviewing stream information supplied on a knowledge document and attached analysis (if available). At a minimum, the knowledge documentation or other approved processes requests the following information:

- Generator information (e.g., name, address, point-of-contact, telephone number)
- Waste stream name
- Waste generating process description
- Chemical characterization information (e.g., characterization method(s), chemicals present, concentration ranges)
- Designation information
- Waste type information (e.g., physical state, absorbents used, inert materials, stabilizing agents used)
- Packaging information (e.g., container type, maximum weight, size)
- Attachments could consist of container drawings, process flow information, analytical data, etc.

This information is developed on a waste stream basis and applied to individual containers prior to transfer. If conformance issues are found during this review, additional information is requested that could include analytical data or a sample to be analyzed.

2.8 Generated Waste

Waste generated by LLBG is considered accepted at LLBG when the waste is generated. Knowledge concerning the generated waste will be entered into the LLBG operating record.

3.0 SELECTING WASTE ANALYSIS PARAMETERS

Physical/chemical screening parameters for verification must be chosen from those in Sections 3.1 and 3.2. Parameters for waste designation and to meet LDR requirements are addressed in Section 3.3. Each physical/chemical screening result must be in agreement with the shipping documentation to determine the acceptability of the result. Conformance issues identified during the confirmation process are documented and managed in accordance with Section 1.1.1.3. Parameters, methods, and rationale for physical/chemical screening parameters are provided in Table 3-1.

Table 3-1. Parameters and Rationale for Physical and Chemical Screening.

Parameter	Method ^a	Rationale for Selection
Physical Screening		
Visual inspection	Field method – observe phases, presence of solids in waste	Confirm consistency between waste and shipping documentation.
Nondestructive evaluation	Field method	Confirm consistency between waste and shipping documentation.
Chemical Screening		
Ignitability and/or headspace volatile organic compound screening	Organic vapor monitor, colorimetric gas sampling tubes, or a lower explosive level meter	Confirm consistency between waste and shipping documentation; ensure compliance with WAC 173-303-395(1)(b).
Peroxide	Field peroxide test paper	Confirm consistency between waste and shipping documentation; ensure compliance with WAC 173-303-395(1)(b).
Liquids	SW-846, Method 9095, Paint Filter Liquids Test	Confirm consistency between waste and shipping documentation.
pH	Field pH screen (pH paper method)	Confirm consistency between waste and shipping documentation; ensure compliance with WAC 173-303-395(1)(b).
Oxidizer	Field potassium iodide test paper	Confirm consistency between waste and shipping documentation; ensure compliance with WAC 173-303-395(1)(b).
Water reactivity	Field water mix screen	Confirm consistency between waste and shipping documentation; ensure compliance with WAC 173-303-395(1)(b).
Cyanides	Field cyanide screen	Confirm consistency between waste and shipping documentation; ensure compliance with WAC 173-303-395(1)(b).
Sulfides	Field sulfide screen	Confirm consistency between waste and shipping documentation; ensure compliance with WAC 173-303-395(1)(b).
Halogenated Organic Carbons	Screening test method for PCBs in transformer oil (SW-846, Method 9079)	Confirm consistency between waste and shipping documentation.

^a Processes based on manufacturer's recommended methodology for test kit or testing equipment, unless otherwise noted. When regulations require a specific method, the method shall be followed.

3.1 Physical Screening Parameters

The following methods are approved for use in performing physical screening.

(1) Visual inspection (preferred method for physical screening):

Rationale. This method meets the requirement to ensure consistency between waste containers and the accompanying waste stream documentation.

Method: The container is opened and the contents are removed as needed for visual examination. Homogenous loose solids are probed to determine the presence of material not documented on the waste stream documentation, or for improperly absorbed liquids. Visual observations are compared with the applicable profile information and the container specific information in the waste stream documentation.

Failure criteria: A container fails inspection for any of the following reasons; (a) undocumented, improperly packaged, or inadequately absorbed liquids; (b) discovery of prohibited articles or materials listed in Section 1.2; (c) discovery of material not consistent with the applicable waste stream documentation ; and (d) variability greater than 25 percent by volume in listed constituents (e.g., paper, plastic, cloth, metal).

(2) NDE:

Rationale. This method meets the requirement to ensure consistency between waste containers and the accompanying waste stream documentation. This method also is subject to the QA requirements listed in Section 2.2.5. Containers that are not easily amenable to visual inspection because of physical or radiological content, or facility availability can be examined safely and economically.

Method: The container is scanned with a NDE system. Data are observed on a video monitor and captured and recorded. Personnel experienced with the interpretation of NDE imagery record their observations. These observations are compared to the contents listed on the waste stream documentation.

Failure criteria: A container fails the inspection for any of the following reasons; (a) undocumented, improperly packaged, or inadequately absorbed liquids; (b) discovery of prohibited articles listed in Section 1.2; (c) image data not consistent with the applicable waste stream documentation; and (d) variability greater than 25 percent by volume in listed constituents (e.g., paper, plastic, cloth, metal).

3.2 Chemical Screening Parameters

The following methods are approved for use in performing chemical screening tests. Chemical screening is used to verify that incoming waste is consistent with waste stream documentation. Failure of a chemical screening test is defined as a chemical screening result that is inconsistent with the associated waste stream documentation.

(1) Ignitability and/or headspace volatile organic compound screening:

Rationale: To determine the potential ignitability and the presence or absence of volatile organic compounds in waste, and to ensure that personnel are adequately protected. This method is used when containers are opened for inspection. This method can be applied to any matrix.

Method: A sample of the headspace gases in a container is analyzed by one or more of the following types of portable instrumentation: organic vapor monitor, colorimetric gas sampling tubes, or a lower explosive level meter.

Failure criteria: High organic vapor readings in matrices not documented as having volatile organic content constitutes failure.

(2) Peroxide screening:

Rationale: To determine the presence of organic peroxides in solvent wastes, to alert personnel to potential hazards, to ensure safe segregation and storage of incompatible wastes, and to confirm consistency with the waste stream documentation. The test is sensitive to low parts per million ranges.

Method: A peroxide test strip is dampened with a pipet sample of liquid waste. Solids are tested by first wetting the test strip with water and contacting a small sample of the waste. A blue color change indicates a positive reaction. The color change can be compared with a chart on the packaging to determine an approximate organic peroxide concentration.

Failure criteria: Peroxide concentrations greater than 20 parts per million in liquid waste constituents that are known organic peroxide formers not documented as having been stabilized constitutes failure. Results that are not consistent with documented constituents fails verification.

(3) Paint filter liquids test:

Rationale: To verify the presence or absence of free liquid in solid or semisolid material.

Method: To a standard paint filter, 100 cubic centimeters or 100 grams of waste are added and allowed to settle for 5 minutes. Any liquid passing through the filter signifies failure of the test. The required method for the paint filter liquids test is method 9095 in the U.S. Environmental Protection Agency (EPA), SW-846, *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods* (the most recently promulgated version) (EPA 1986).

Failure criteria: Failure of the test in waste matrices not documented as having free liquids constitutes failure of the container. Small quantities of condensate trapped in inner plastic liner folds are acceptable.

(4) pH screen:

Rationale: To identify the pH and corrosive nature of an aqueous or solid waste, to ensure safe segregation and storage of incompatible waste, and to confirm consistency with the waste stream documentation.

Method: pH measurement is performed in accordance with SW-846. Processes are maintained by the LLBG and conform to the requirements of Section 2.2.5, Quality Assurance and Quality Control for Confirmation Process.

Failure criteria: If the pH of a matrix exceeds regulatory limits (less than or equal to 2.0 or greater than or equal to 12.5) in waste not documented as being regulated for this property, the container fails verification.

(5) Oxidizer screen:

Rationale: To determine if a waste exhibits oxidizing properties, to ensure safe segregation and storage of incompatible waste, and to confirm consistency with the waste stream documentation. This test can be applied to waste liquids, solids, and semisolids.

Method: 1 or 2 drops of 3N HCl acid is added to the Oxidizer test paper (potassium iodide, starch). The test paper is touched to a pea size sample of the waste to be tested. A black, blue/black, or purple color change determines a positive oxidizer test. Processes are maintained by the LLBG and conform to the requirements of Section 2.2.5, Quality Assurance and Quality Control for Confirmation Process.

Failure criteria: A positive indication in a waste that is not consistent with documented constituents fails verification.

(6) Water reactivity screen:

Rationale: To determine if the waste has the potential to vigorously react with water to form gases or other reaction products. This information is used to ensure safe segregation and storage of incompatible waste, and to confirm consistency with the waste stream documentation.

Method: 2 or 3 drops of distilled water is added to an oxidizer test paper strip. The test paper is touched to a pea size sample of the waste to be tested. The observance of effervescence, a violent reaction, flaming or boiling indicates a positive test. Processes are maintained by the LLBG and conform to the requirements of Section 2.2.5, Quality Assurance and Quality Control for Confirmation Process.

Failure criteria: A positive indication in a waste that is not consistent with documented constituents fails verification.

(7) Cyanide screen:

Rationale: To indicate if waste could release hydrogen cyanide on acidification near pH 2. This information is used to ensure safe segregation and storage of incompatible waste and to confirm consistency with the waste stream documentation.

Method: A pea size sample of the waste to be tested is dissolved in a small quantity of water. A mixture of ferrous ammonium sulfate and ferrous ammonium citrate is added to the stoppered test tube. The sample is then shaken and 3N HCl is added to the solution. A dark Prussian blue color change indicates the presence of the acid. Processes are maintained by the LLBG and conform to the requirements of Section 2.2.5, Quality Assurance and Quality Control for Confirmation Process.

Failure criteria: A positive indication in a waste that is not consistent with documented constituents fails verification.

(8) Sulfide screen:

Rationale: To indicate if the waste could release hydrogen sulfide on acidification near pH 2. This information is used to ensure safe segregation and storage of incompatible wastes and to confirm consistency with the waste stream documentation.

Method: 5 drops of 3N HCl acid is added to a pea size sample of the waste to be tested. Lead acetate test paper is touched to the sample. A brown or black color change of paper indicates a positive test. Processes are maintained by the LLBG and conform to the requirements of Section 2.2.5, Quality Assurance and Quality Control for Confirmation Process.

Failure criteria: A positive indication in a waste that is not consistent with documented constituents fails verification.

(9) Halogenated Organic Carbons screen:

Rationale: To indicate whether PCBs or other chlorinated solvents are present in the waste. This information is used to confirm consistency with the waste stream documentation and to determine if additional information/data are needed to properly store and treat the waste.

Methods: Field organic chlorine tests appropriate to the matrix, such as those offered by the Dexsil Corporation (e.g., Chlor-N-Oil, Chlor-N-Soil), are used. These screening tests are available with several detection limits that enable the verification to be performed in the concentration range applicable to the proposed management path of the waste.

Failure criteria: A positive indication of chlorinated organics in a waste that is not documented as having chlorinated organic content constitutes failure.

3.3 Other Analysis Parameters

Parameters needed to meet designation, characterization, and LDR requirements for mixed and dangerous waste stored and/or treated at the LLBG are identified in Table 3-2. The most recent promulgated method for SW-846 shall be used.

In determining the characteristic of ignitability, either the Pensky-Martens (method 1010) or the Setaflash (method 1020), must be employed when testing. The characteristic of corrosivity also requires a specific test method. When testing the pH of a given waste stream, method 9040 or method 9045 must be used in accordance with WAC 173-303-090(6).

Compliance with LDR for mixed and dangerous waste that have a treatment standard expressed as constituent concentrations in wastes (CCW) (40 CFR 268.40, incorporated by reference by WAC 173-303-140) can be shown using any appropriate method. If the waste treatment standard is expressed as constituent concentrations in waste extracts (CCWE) (40 CFR 268.40, incorporated by reference by WAC 173-303-140), then the Toxicity Characteristic Leaching Procedure (TCLP) EPA SW-846 Method 1311, which is specifically referenced in 40 CFR 268.41(a), must be performed. Following that, however, any appropriate method may be used to determine concentrations of hazardous constituents in the extract and to show compliance with LDR. Both Cyanides (Total) and Cyanides (Amenable) for nonwastewaters are to be analyzed using Method 9010 or 9012, as incorporated by reference in 40 CFR 260.11. UHCs will be evaluated as required by 40 CFR 268.48.

For other parameters or methods not otherwise specified, the following are acceptable sources of testing methods (standard methods):

- Analytical methods cited in WAC 173-303.
- The most recently promulgated version of *Test Method for Evaluating Solid Waste: Physical/Chemical Methods*, SW-846, U.S. Environmental Protection Agency, EPA, Office of Solid Waste.

- Other current U.S. EPA methods, as applicable to the matrix under evaluation.
- *Standard Methods for the Examination of Water and Wastewater*, American Public Health Association (APHA), American Water Works Association, Water Environment Federation.
- *Annual Book of ASTM Standards*, American Society for Testing and Materials.
- *AOAC Official Methods of Analysis*, AOAC (Association of Official Analytical Chemists), International.

Appropriate QA/QC documentation is required to be maintained per Section 5.0, regardless of the method used.

Table 3-2. Analytical Parameters, Methods, and Rationale for Waste Received at Low-Level Burial Grounds.

Parameter	Analytical method ^a	Media type	Rationale for selection of waste acceptance parameters	Rationale for analysis
General chemistry				
Flashpoint	1010/1020	Liquid	To provide documentation for safe storage conditions	To determine regulatory status as D001 waste, to provide proper waste designation and applicability of LDR requirements
pH	9040	Liquid, sludge	To indicate the degree of corrosivity for safe handling; to provide for proper waste designation; and to identify waste that might compromise container integrity	To determine regulatory status as D002 waste, to provide proper waste designation, applicability of LDR requirements and state-only requirements.
	9045	Solid		
Hydroxide	9040	Liquid	To provide documentation for safe treatment and storage conditions; and to comply with the LLBG waste acceptance criteria.	To provide proper waste designation and applicability of LDR requirements.
Water reactivity	Field method	Liquid, sludge	To determine whether the waste has a potential to violently react with water to form gases or generate heat; to provide documentation for safe treatment and/or storage conditions for waste designation; and to comply with the LLBG is waste acceptance criteria.	To provide proper waste designation; safe storage and management.
Free liquids	9095	Liquid, solid sludge, solid	To determine applicability of LDRs and for characterization of appropriate treatment	To determine appropriate state-only LDR status of the waste.

Table 3-2. Analytical Parameters, Methods, and Rationale for Waste Received at Low-Level Burial Grounds.

Parameter	Analytical method ^a	Media type	Rationale for selection of waste acceptance parameters	Rationale for analysis
Cyanide	9010/9012	Liquid, sludge, solid	For safe storage; for proper waste designation; applicability of LDR; and characterization of appropriate treatment	To provide proper waste designation and applicability of LDR requirements.
Sulfide	9030	Liquid, sludge, solid	For safe storage; for proper waste designation; applicability of LDR; and characterization of appropriate treatment	To provide proper waste designation and applicability of LDR requirements.
Organic analyses				
PCBs	8082	Liquid, sludge, solid	To determine proper waste designation for management of waste in accordance with the <i>Toxic Substance Control Act (TSCA)</i> of 1976 and WAC 173-303.	To provide proper waste designation and to meet TSCA and LDR requirements.
Total organic carbon	9060	Liquid, sludge, solid	To determine applicability of LDR and applicability to state-only requirements.	To provide proper waste designation and applicability to state-only requirements, to meet LDR requirements, and comply with the LLBG waste acceptance criteria.
Total organic halides	9020/9021/9022	Liquid, sludge	To determine proper waste designation and applicability to state-only requirements.	To provide proper waste designation and applicability to state-only requirements.
Persistent constituents	9075/9076/9077/ 9211/9212/9214/ 9250/9251/9253			
Total suspended solids	160.2 ^b	Liquid, sludge	To determine applicability of LDR and status as a wastewater	To provide applicability of LDR and status as a wastewater.

Table 3-2. Analytical Parameters, Methods, and Rationale for Waste Received at Low-Level Burial Grounds.

Parameter	Analytical method ^a	Media type	Rationale for selection of waste acceptance parameters	Rationale for analysis
Volatile organic compounds	1311/8260	Liquid, sludge, solid	To determine proper waste designation, applicability of LDRs, and characterization of appropriate treatment.	To provide proper waste designation, regulatory status, and applicability of LDR requirements.
Semi volatile organic compounds	1311/8270	Liquid, sludge, solid	To determine proper waste designation, applicability of LDRs, and characterization of appropriate treatment.	To provide proper waste designation, regulatory status, and applicability of LDR requirements.
Chlorinated herbicides	8151	Liquid	Not applicable	To provide proper waste designation and applicability to state-only requirements.
Inorganic analyses				
Arsenic	1311/6010 200.7 ^b	Liquid, sludge, solid	To provide for proper waste designation, applicability of LDRs, and for characterization of appropriate treatment.	To determine proper waste designation, regulatory status as a toxic characteristic waste, and applicability of LDR requirements.
Barium	1311/6010	Liquid, sludge, solid	To provide for proper waste designation, applicability of LDRs, and for characterization of appropriate treatment.	To determine proper waste designation, regulatory status as a toxic characteristic waste, and applicability of LDR requirements.
Cadmium	1311/6010	Liquid, sludge, solid	To provide for proper waste designation, applicability of LDRs, and for characterization of appropriate treatment.	To determine proper waste designation, regulatory status as a toxic characteristic waste, and applicability of LDR requirements.
Chromium	1311/6010	Liquid, sludge, solid	To provide for proper waste designation, applicability of LDRs, and for characterization of appropriate treatment.	To determine proper waste designation, regulatory status as a toxic characteristic waste, and applicability of LDR requirements.

Table 3-2. Analytical Parameters, Methods, and Rationale for Waste Received at Low-Level Burial Grounds.

Parameter	Analytical method ^a	Media type	Rationale for selection of waste acceptance parameters	Rationale for analysis
Lead	1311/6010 200.7 ^b	Liquid, sludge, solid	To provide for proper waste designation, applicability of LDRs, and for characterization of appropriate treatment.	To determine proper waste designation, regulatory status as a toxic characteristic waste, and applicability of LDR requirements.
Mercury	1311/7470/6020	Liquid, sludge, solid	To provide for proper waste designation, applicability of LDRs, and for characterization of appropriate treatment.	To determine proper waste designation, regulatory status as a toxic characteristic waste, and applicability of LDR requirements.
Silver	1311/6010	Liquid, sludge, solid	To provide for proper waste designation, applicability of LDRs, and for characterization of appropriate treatment.	To determine proper waste designation, regulatory status as a toxic characteristic waste, and applicability of LDR requirements.
Selenium	1311/6010 200.7 ^b	Liquid, sludge, solid	To provide for proper waste designation, applicability of LDRs, and for characterization of appropriate treatment.	To determine proper waste designation, regulatory status as a toxic characteristic waste, and applicability of LDR requirements.
Antimony	6010	Liquid, sludge, solid	To provide for proper waste designation, applicability of LDRs, and for characterization of appropriate treatment.	To determine proper waste designation, regulatory status as a toxic characteristic waste, and applicability of LDR requirements.
Beryllium	6010	Liquid, sludge, solid	To provide for proper waste designation, applicability of LDRs, and for characterization of appropriate treatment.	To determine proper waste designation, regulatory status as a toxic characteristic waste, and applicability of LDR requirements.
Nickel	6010	Liquid, sludge, solid	To determine applicability of LDRs, and for characterization of appropriate treatment.	To meet LDR requirements.

Table 3-2. Analytical Parameters, Methods, and Rationale for Waste Received at Low-Level Burial Grounds.

Parameter	Analytical method ^a	Media type	Rationale for selection of waste acceptance parameters	Rationale for analysis
Thallium	6010	Liquid sludge, solid	To provide for proper waste designation, applicability of LDRs, and for characterization of appropriate treatment.	To determine proper waste designation, regulatory status as a toxic characteristic waste, and applicability of LDR requirements.

^a Procedures based on EPA SW-846, unless otherwise noted. When regulations require a specific method, the method shall be followed.

^b EPA-600/4-79/020 (EPA 1983), unless otherwise noted.

LDR = land disposal restriction.

PCB = polychlorinated biphenyls.

4.0 SELECTING SAMPLING PROCESSES

Specific sampling processes and techniques depend on both the nature of the material and the type of packaging. Waste samples are handled and preserved as necessary to protect the sample. For treatment, preservation techniques, and holding times the LLBG shall utilize the processes and techniques recommended in SW-846. This section describes the sampling methodology used to obtain representative samples. DQOs have been established with Ecology in accordance with TPA Action Plan Section 6.5 (Ecology et al. 2003) and have been documented and reflected in this WAP.

4.1 Sampling Strategies

Table 4-1 contains waste forms and sample equipment used to sample referenced waste. Sampling of these waste forms is performed in accordance with Table 4-1.

4.2 Sampling Methods

Samples are processed at one of several laboratories qualified to perform analysis of waste samples (refer to Section 5.0). Sampling methods are those described in WAC 173-303 110(2) and incorporated by reference into this plan.

The basic sampling sequence includes the following:

- Obtain a unique sample number and complete the sample tag before sampling
- Obtain a precleaned sampler and sample bottles
- Attach sample label to sample bottles
- For sampling liquid waste, use a sampler or pipet to sample for two phase liquids. Homogeneous liquids in small containers will be poured into a sample bottle
- For sampling solid waste, use a scoop, trier, or hand auger to obtain a sample of the waste. For large containers of waste, composite several augers or scoops to ensure samples are representative
- Fill sample containers in the following sequence: volatile organics, semivolatile organics, metals, ignitability, pH (corrosivity)
- For solid waste, wipe the exterior surfaces of the sample bottles with a dry rag
- Attach sample labels to outer plastic bags
- Place samples in an appropriate receptacle for transfer to the laboratory
- Complete the chain-of-custody forms
- Seal and mark the receptacle in accordance with WAC 173-303-071(3)(1)
- Transfer receptacle to the analytical laboratory, as appropriate to meet sample holding times

- Properly clean and decontaminate nondisposable sampling equipment or package for return to central sampling equipment decontamination area according to onsite requirements.

4.3 Selecting Sampling Equipment

Sampling equipment selection is detailed in Table 4-1. Sampling equipment needed to sample waste is maintained and decontaminated as necessary by the LLBG to ensure representative samples according to SW-846.

4.4 Sample Preservation

Sample preservation follows SW-846 protocol; however, other approved preservation methods can be used.

4.5 Establishing Quality Assurance and Quality Control For Sampling

This WAP incorporates the requirements of Permit Condition I.I.E, for QA/QC. Sample collectors prepare a permanent log of sampling activities in accordance with SW-846, Chapter 9.0. Records are maintained in accordance with Section 8.0 of this WAP. Log entries include as appropriate: date of collection, time of collection, location, batch number, sample number, tank number, copy of the chain-of-custody form, sampling methodology, container description, waste matrix (liquid), description of generating process (e.g., decontamination activities), number and volume of samples, field observations, field measurements (e.g., pH, percent lower explosive limit), laboratory destination and laboratory number, and signature. These log entries are made by the appropriate personnel while the sampling is performed. The logs or copies of logs are maintained in the LLBG operating record after completion of sampling activities.

A chain-of-custody record accompanies samples at all times. The LLBG shall maintain written chain-of-custody processes to ensure accountability of waste sample handling and to ensure sample integrity. All samples are labeled with a unique identifier.

During all sampling activities, strict compliance with applicable industrial hygiene and safety standards is mandatory. Appropriate sampling and decontamination processes are used.

The following QA/QC elements are used by the LLBG to ensure sampling activities for designation purposes result in acceptable laboratory data:

- Representative sampling methods as defined by WAC 173-303-110(2); 40 CFR 261 Appendix I; and/or SW-846 Chapter 9.0
- Appropriate sample containers and equipment
- Samples numbered
- Traceable labeling system
- Field QA/QC samples (applicable SAP)
- Equipment calibration (current as appropriate)
- Chain-of-custody.

Table 4-1. LLBG Chemical Screening Sampling Equipment.

Waste form	Reference in SW-846, Chapter 9.0	
	Waste type	Equipment*
Liquids	Free-flowing liquids and slurries	COLIWASA, glass thief or pipet
Solidified liquids	Sludges	Trier, scoops and shovels
Sludges	Sludges	Trier, scoops and shovels
Soils	Sand or packed powders and granules	Auger, scoops and shovels
Absorbents	Large-grained solids	Large trier, scoops and shovels
Wet absorbents	Moist powders or granules	Trier, scoops and shovels
Process solids and salts	Moist powders or granules	Trier, scoops and shovels
	Dry powders or granules	Thief, scoops and shovels
	Sand or packed powders and granules	Auger, scoops and shovels
	Large-grained solids	Large trier, scoops and shovels
	Moist powders or granules	Trier, scoops and shovels
Ion exchange resins	Dry powders or granules	Thief, scoops and shovels
	Sand or packed powders and granules	Auger, scoops and shovels

COLIWASA = composite liquid waste sampler.

* other ASTM-approved equipment could be used to collect samples.

NEIC VP0928 E01

Page 54 of 68

5.0 LABORATORY SELECTION AND QUALITY ASSURANCE/QUALITY CONTROL

The selection of any laboratory shall be based on the ability of the laboratory to demonstrate compliance to this section with experience and capability in the following major categories:

- Comprehensive written QA/QC program
- Technical analytical expertise
- Effective information management systems.

The QA and QC requirements outlined in this section are applicable to laboratory activities governed by this WAP.

5.1 Evaluation of Laboratories

All laboratories providing analytical support to the LLBG are required to have a current, laboratory approved QA plan. The laboratory QA plan shall be submitted to the LLBG, and if necessary to Ecology in accordance with TPA Action Plan Section 6.5 (Ecology et al. 2003), for review and acceptance before commencement of analytical work. The QA plan shall, at a minimum, address the following elements:

- Sample custody and management practices (also refer to Section 4.0)
- Sample preservation protocols
- Sample preparation and analytical process requirements
- Instrument maintenance and calibration requirements
- Internal QC measures, e.g., method blanks, spikes
- Corrective action process.

Each laboratory shall be audited periodically by an independent organization to evaluate the effective implementation of the laboratory's QA/QC program. QA personnel and a technical expert shall evaluate the laboratory through onsite observations and/or reviews of the following documentation: copies of the QA/QC documents; records of surveillances/inspections; audits; non-conformances, and corrective actions. The LLBG shall ensure independent organizations; QA personnel and technical experts are qualified to perform these evaluations.

5.2 Quality Assurance/Quality Control Objectives

The overriding goal of the analytical program is to support the accurate designation of waste and/or demonstrate compliance to LDR standards. Laboratory QA/QC programs shall be designed to meet the following objectives.

- Minimize errors. Errors could be introduced during preparative, analytical, and/or reporting phases of work. QC program elements include analysis of samples to written and approved processes and certification of the laboratory.
- Provide information. The designation of waste relies on a combination of knowledge and data. QA/QC programs that ensures accurate, precise, reliable, and reproducible data.

Key QA program elements are designed to provide objective evidence that waste analysis methods meet the performance specifications of the LLBG. QA activities and implementation responsibilities are as follows:

- Activity based laboratory inspections. Inspections are performed by the LLBG. Inspections verify that specific guidelines, specifications, or processes for the activities are completed successfully.
- Laboratory analyses. Analyses are performed by onsite or offsite laboratories on samples of waste using written and approved processes.
- Development of inspection checklists. Checklists are required for laboratory inspections and are designed to ensure that the inspected activity is consistently addressed. Checklists are completed during the inspection to document results.
- Instrument calibration and calibration verification. These activities are performed by the laboratory and are required for ensuring data of known accuracy and precision. Calibration data are maintained and stored to ensure traceability to reported results.

5.3 Laboratory Quality Assurance/Quality Control

All analytical work shall be defined and controlled by a statement of work, work order, or other work authorizing documentation. These authorizations documents shall include QA performance requirements. Samples will be handled according to approved, written and controlled laboratory processes. The accuracy, precision, and limitations of analytical data are evaluated through QC performance.

As needed, the LLBG will conduct analyses to determine completeness of information and whether waste meets the acceptance criteria for treatment, storage, or disposal at one of the Hanford Facility TSD units or those of a chosen offsite TSD facility. Testing and analytical methods will depend on the type of analysis sought and the reason for needing the information. For parameters or methods not otherwise specified in Section 3.0, the following are acceptable sources of testing methods (standard methods).

- Analytical methods cited in WAC 173-303;
- The most recently promulgated version of *Test Method for Evaluating Solid Waste: Physical/Chemical Methods*, SW-846, U.S. Environmental Protection Agency, EPA, Office of Solid Waste;
- Other current U.S. EPA methods, as applicable to the matrix under evaluation;
- *Standard Methods for the Examination of Water and Wastewater*, American Public Health Association (APHA), American Water Works Association, Water Environment Federation;
- *Annual Book of ASTM Standards*, American Society for Testing and Materials;
- *AOAC Official Methods of Analysis*, AOAC (Association of Official Analytical Chemists), International.

Other laboratory approved, written and controlled analytical methods, proprietary methods, and non-standard methods may be needed to develop operational and safety related information.

5.4 Data Assessment

Data used for decision making need to be scientifically sound, of known quality, and thoroughly documented. Data validation is not required; however, the LLBG is responsible to ensure that data assessment or evaluation is completed. Data are assessed to determine compliance with quality standards approved by Ecology and established by this Permit in Section 5.3 are as follows.

Precision – The overall precision shall be the agreement among the collected samples (duplicates) for the same parameters, at the same location, subjected to the same preparative and analytical techniques. Analytical precision shall be the agreement among individual test portions taken from the same sample, for the same parameters, subjected to the same preparative and analytical techniques.

Accuracy – Accuracy of the measurement system shall be evaluated by use of various kinds of QA samples, including, but not limited to, certified standards, in-house standards, and performance evaluation samples.

Representativeness – Representativeness addresses the degree to which the data accurately and precisely represent a real characterization of the waste stream, parameter variation at a sampling point, sampling conditions, and the environmental condition at the time of sampling. The issue of representativeness is addressed for the following points:

- Based on the generating process, the waste stream, and its volume, an adequate number of sampling locations are selected;
- The representativeness of selected media has been defined accurately;
- The sampling and analytical methodologies are appropriate;
- The environmental conditions at the time of sampling are documented.

Completeness – Completeness is the amount of usable data obtained from a measurement system compared to the total amount of data requested.

Comparability – Comparability is the confidence with which one data set can be compared to another. This usually is accomplished by application of statistical methods.

2.4 Data Assessment

Data used for decision making need to be scientifically sound, of known quality, and thoroughly documented. Data validation is not required; however, the L.L.B.C. is responsible to ensure the data assessment or evaluation is completed. Compliance with quality standards approved by Ecology and established by the Permit in Section 2.3 are as follows.

Precision – The overall precision shall be the agreement among the collected samples (duplicates) for the same parameter, at the same location, subjected to the same preparative and analytical techniques. Analytical precision shall be the agreement among individual test portions taken from the same sample, for the same parameter, subjected to the same preparative and analytical techniques.

Accuracy – Accuracy of the measurement system shall be evaluated by use of various kinds of QA samples, including, but not limited to, certified standards, in-house standards, and performance evaluation samples.

Representativeness – Representativeness addresses the degree to which the data representatively and precisely represent a real characteristic of the waste stream, parameter variation at a sampling point, sampling conditions, and the environmental condition at the time of sampling. The issue of representativeness is addressed for the following points:

- Based on the generating process, the waste stream, and its volume, an adequate number of sampling locations are selected;

- The representativeness of selected media has been defined accurately;

- The sampling and analytical methodologies are appropriate;

- The environmental conditions at the time of sampling are documented.

Completeness – Completeness is the amount of usable data obtained from a measurement system compared to the total amount of data requested.

Comparability – Comparability is the confidence with which one data set can be compared to another. This usually is accomplished by application of statistical methods.

This page intentionally left blank.

6.0 SELECTING WASTE RE-EVALUATION FREQUENCIES

The waste profile and supporting data and documentation shall be re-evaluated at least annually, or more often, if the generator has informed the LLBG of a change in the waste generation process, or if waste received at the LLBG C or the description on the shipping documentation does not match the waste profile.

If the generator has informed the LLBG of a change in the waste generation process, the waste re-enters the waste stream approval process described in Section 2.1.1. The LLBG will evaluate verification data against the waste profile to identify any waste streams for which a change in waste generation process is suspect. If a waste stream is suspect, that waste stream will re-enter the approval process described in Section 2.1.1.

When a waste profile is re-evaluated, the LLBG could request the generator to do one or more of the following:

- Verify accuracy of current waste profile;
- Supply a new waste profile;
- Submit a sample to confirm the waste is still within the profile parameters.

6.0 SELECTING WASTE RE-EVALUATION FREQUENCIES

The waste profile and supporting data and documentation shall be re-evaluated at least annually, or more often, if the generator has informed the shipping documentation does not match the waste profile received at the LLBG C or the description on the shipping documentation does not match the waste profile. If the generator has informed the LLBG of a change in the waste generation process, the waste re-eval process the waste stream approval process described in Section 2.1.1. The LLBG will evaluate verification data against the waste profile to identify any waste streams for which a change in waste generation process is suspect. If a waste stream is suspect, that waste stream will re-enter the approval process described in Section 2.1.1.

When a waste profile is re-evaluated, the LLBG could request the generator to do one or more of the following:

- Verify accuracy of current waste profile;
- Supply a new waste profile;
- Submit a sample to confirm the waste is still within the profile parameters.

This page intentionally left blank.

7.0 SPECIAL WASTE ANALYSIS PROCEDURAL REQUIREMENTS

This section discusses any special process requirements for receiving mixed waste at the LLBG.

7.1 Processes for Receiving Onsite and Offsite Waste

The processes for receiving waste are described in Section 2.0. In general, mixed waste received from onsite generators is managed the same as waste received from offsite generators. Differences include, but are not limited to the following: (1) physical/chemical screening frequencies for verification [minimum percentages of 5 percent for waste from onsite generators and 10 percent for waste from offsite generators (note that chemical screening frequency depends on the physical screening frequency)], (2) shipping documentation (Uniform Hazardous Waste Manifests are used for waste from offsite generators and shipping documents are used for waste from onsite generators), and (3) LDR documentation requirements for mixed or dangerous waste (notification for waste from offsite generators and equivalent information from onsite generators).

7.2 Processes for Ignitable, Reactive, and Incompatible Waste

The LLBG accepts ignitable, reactive, or incompatible waste (refer to Section 1.2). Pre-shipment review and/or chemical screening requirements in Section 2.0 are used to identify whether the waste is ignitable, reactive, or incompatible. The LLBG waste acceptance criteria identifies certain management requirements for ignitable, reactive, and incompatible waste, ensuring the waste is stored in a safe manner. Precautions are taken when ignitable, reactive, or incompatible waste is stored within the LLBG.

7.3 Provisions for Complying With Federal and State Land Disposal Restriction Requirements

State-only and federal LDR requirements restrict the land disposal of certain types of waste subject to *Resource Conservation and Recovery Act (RCRA) of 1976* and the *Hazardous Waste Management Act of 1976*. Waste managed on the Hanford Facility falls within the purview of these LDRs per 40 CFR 268 and WAC 173-303-140. Waste constituents that are subject to LDRs are identified in 40 CFR 268.40 and referenced by WAC 173-303-140. Waste must meet certain treatment standards, as specified in 40 CFR 268 and/or WAC 173-303-140, if the waste is to be land disposed.

Generators determine if LDRs apply to the mixed or dangerous waste based on knowledge or testing [40 CFR 268.7(a)]. Each waste is analyzed for those LDR constituents contained in the listed and characteristic waste numbers identified by the generator, including any UHC identified by 40 CFR 268.2(i), if the knowledge of the generator is not sufficient to make a determination. If the LDR waste does not meet the applicable treatment standards, the generator provides waste information with each shipment stating so in accordance with WAC 173-303-380(1)(j),-(k),-(l),-(m),-(n), or -(o). If the waste meets the LDR standards, the generator must send a certification that the waste meets the treatment standards.

7.3.1 Waste Treatment

Waste is treated to meet LDR as specified in 40 CFR 268 and WAC 173-303-140 with the exception of mixed waste designated by the Secretary of Energy for a disposal facility pursuant to the *Land Withdrawal Act*, as amended.² Mixed waste is treated to the applicable standards required by the disposal facility or

² Subject to "*State of Washington v. Bodman*," presently on appeal before the United States Court of Appeals for the Ninth Circuit, No. 06-35227.

other applicable requirements. The LLBG potentially can partially treat or pre-treat certain waste before shipment to a permitted offsite facility that could perform full treatment of the specific waste to meet LDR treatment requirements. Waste requiring treatment other than what the LLBG can provide is repackaged, labeled, and transferred to a TSD unit for storage pending identification or development of an appropriate treatment. Prior to treatment of waste, the LLBG will have in place processes to ensure safe waste treatment as defined in Section 1.1.3 of this WAP. When characteristics of the waste are changed as a result of treatment or other processing, documentation will be entered into the unit-specific operating record. Dangerous waste is shipped to an offsite TSD for treatment.

When evaluating the treatability of certain characteristic waste, consideration must be given to any additional UHCs that might be found in certain characteristic waste. The treatment standards, for the most part, are concentration-based. When the concentration-based standards are used, the constituent concentrations for the waste must fall below those specified in 40 CFR 268.40 and/or 268.48 for UHCs and in WAC 173-303-140 for land disposal without treatment. If the concentrations exceed these limits, the waste must be treated before disposal. The alternative treatment standards for hazardous debris as specified in 40 CFR 268.45 or for contaminated soil as specified in 40 CFR 268.49, or for labpacks in 40 CFR 268.42(c) could also be used.

Treatment is performed in the LLBG as described in the Part A. Treatment of mixed waste within the trench cannot be performed directly on the working surface. Concrete pads, blocks, or other approved methods can be utilized to elevate the mixed waste off of the working surface.

Treatment of state-only extremely hazardous waste (WT01, WP01, and WP03) is performed in accordance with Revised Code of Washington (RCW) 70.105.050(2) for mixed waste and/or WAC 173-303-140(4)(a) for dangerous waste as applicable.

Waste managed at the LLBG is treated to meet either concentration-based treatment standards or technology-based standards. The alternative treatment standards for hazardous debris as specified in 40 CFR 268.45 or for contaminated soil as specified in 40 CFR 268.49 also could be used. When dealing with multiple dangerous waste numbers, both standards could apply, requiring a treatment train for ultimate compliance to LDR. In most cases, stabilization treatment is at the end of the treatment train. In some instances, as with the cementing process, treatability studies could be performed to ensure that when the waste is treated, LDR requirements are met.

Grab samples are collected on each batch of concentration-based treated waste to ensure that the treatment process was successful. For specified technologies, the LLBG operating record contains information to demonstrate the treatment process was well designed and well operated.

7.3.2 Sampling and Analytical Methods

Section 3.3 defines the parameters and methods needed to demonstrate compliance to LDR treatment standards. It is recognized that ALARA concerns may warrant modifications to the methods to ensure appropriate protection of personnel health and safety without impact to the method or sample integrity. Waste analyzed using SW-846 methods modified to address ALARA protection concerns are considered acceptable provided applicable data quality objectives can be met.

Samples of waste are transferred to the sample management area for packaging and transferred to an onsite laboratory or shipped offsite to a laboratory for analysis. Samples are collected in accordance with SW-846 and as described in Section 4.0. Storage is provided for waste containers while waiting laboratory analysis results.

7.3.3 Land Disposal Restriction Certification of Treatment

When LDR treatment has been completed and analytical results (if applicable per 40 CFR 268.40 and WAC 173-303-140) have verified the LDR treatment is successful, certification of the LDR treatment is required by the LLBG. The certification statement is prepared by the unit in accordance with 40 CFR 268.7b, d, and e. A copy of the certification is placed in the LLBG operating record.

When a LDR waste does not meet the applicable treatment standards set forth in 40 CFR 268.40 and WAC 173-303-140, or exceeds the application prohibition levels set forth in 40 CFR 268.32 or Section 3004(d) of RCRA, this information is placed in the LLBG operating record, in accordance with WAC 173-303-380(1)(k), (n), and -(o).

1
2
3
4
5

7.3.3 Land Disposal Restriction Certification of Treatment

When LDR treatment has been completed and analytical results (if applicable per 40 CFR 268.40 and WAC 173-303-140) have verified the LDR treatment is successful, certification of the LDR treatment is required by the LLBG. The certification must be in accordance with 40 CFR 268.70, d, and e. A copy of the certification is placed in the LLBG operating record.

When a LDR waste does not meet the applicable treatment standards set forth in 40 CFR 268.40 and WAC 173-303-140, or exceeds the applicable prohibition levels set forth in 40 CFR 268.32 or Section 3004(d) of RCRA, this information is placed in the LLBG operating record, in accordance with WAC 173-303-380(a), (b), and (c).

This page intentionally left blank.

8.0 RECORDKEEPING

Recordkeeping requirements applicable to this WAP are described in the *Hanford Facility RCRA Permit*, Attachment 33, General Information Portion, Table 12.1 (Ecology 2004) and this WAP.

The LLBG maintains the waste stream documentation or other approved processes, supporting documentation, and associated QA/QC data described in this WAP in accordance with the requirements in Permit Condition II.I (Ecology 2004).

1
2
3
4
5

8.0 RECORDKEEPING

Recordkeeping requirements applicable to this WAP are described in the Hanford Facility RCRA Permit, Attachment 33, General Information (1) and this WAP. This page intentionally left blank.

The L.L.B.G. maintains the waste stream documentation or other approved process, supporting documentation, and associated QA/QC data described in this WAP in accordance with the requirements in Permit Condition 11.1 (Ecology 2004).

9.0 REFERENCES

- ASNT, 2001, *Personnel Qualification and Certification in Nondestructive Testing*, SNT-TC-1A, American Society for Nondestructive Testing, Columbus, Ohio.
- Code of Federal Regulations, as revised, Office of the Federal Register National Archives and Records Administration.
- DOE/RL-88-20, *Hanford Facility Dangerous Waste Permit Application Low-Level Burial Grounds*, latest revision, U.S. Department of Energy, Richland Operations Office, Richland, Washington.
- DOE/RL-94-02, *Hanford Emergency Management Plan*, latest revision, U.S. Department of Energy, Richland Operations Office, Richland, Washington.
- Ecology, EPA, and DOE-RL, 2003, *Hanford Federal Facility Agreement and Consent Order*, Washington State Department of Ecology, U.S. Environmental Protection Agency, U.S. Department of Energy, Richland Operations Office, Olympia, Washington, amended periodically.
- Ecology, 2004, *Hanford Facility RCRA Permit*, WA7890008967, Washington State Department of Ecology, Richland, Washington, revised periodically.
- EPA, 1983, *Methods for Chemical Analysis of Water and Wastes*, EPA-600/4-7-020, U.S. Environmental Protection Agency, Environmental Monitoring and Support Laboratory, Cincinnati, Ohio.
- EPA, 1986, *Test Methods for Evaluating Solid Waste: Physical/Chemical Methods, Third Edition; Final Update III-B*, SW-846, as amended, Office of Solid Waste and Emergency Response, U.S. Environmental Protection Agency, Washington, D.C. Available on the Internet at www.epa.gov/SW-846/main.htm.
- HNF-1221, *LLBG Dangerous Waste Training Plan*, latest revision, Fluor Hanford, Richland, Washington.
- HNF-IP-0263-LLBG, *Building Emergency Plan for Low-Level Burial Grounds*, latest revision, Fluor Hanford, Richland, Washington.
- NIOSH, as amended, *Registry of Toxic Effects of Chemical Substances*, U.S. Department of Health and Human Services, Public Health Service Centers for Disease Control and Prevention national Institute for Occupational Safety and Health. Available on the Internet at <http://www.cdc.gov/niosh/97-119.html>.
- WAC 173-303, "Dangerous Waste Regulations," *Washington Administrative Code*, as amended, Washington State Department of Ecology, Olympia, Washington.

9.0 REFERENCES

This page intentionally left blank.